

Hitchcock's Machine Tool Blue Book

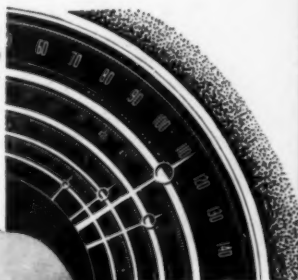
MARCH, 1935

THIRTIETH YEAR

U.S.

Varidrive

MOTOR



**1000
SPEEDS**

at the turn
of a wheel

**MICRO - SPEED
CONTROL**

1 r. p. m. to
10,000 r.p.m.

New Illustrated
Bulletin now ready

S. ELECTRICAL MFG. CO., 1522 So. Western Ave., Chicago, Ill.

PUBLISHED AT 508 So. DEARBORN ST. CHICAGO

SKILSAW DRILLS

BEAR DOWN! These husky tools can **TAKE IT!**



**4 1/4 LBS. of
CONCENTRATED
DRILLING POWER!**
SKILSAW
LIGHT DUTY
1/4" DRILL
—beyond its class in
performance, yet only
\$24.50

- **HUSKIER!**
- **SMOOTHER!**
- **FINER!**

Test Them in Action—Then You'll See!

Model for Model, Skilsaw Drills deliver an over-plus of power and performance as compared with any similar tools you ever used. Finer, lighter Die-Cast Alloy Bodies. Full Ball-Bearing construction. Specially built motors. Superior engineering and precision manufacturing in every single detail.

10 Powerful Models. Ask your distributor for full details about Skilsaw Drills—or write us for new catalog.

SKILSAW INC., 3269 Elston Ave., Chicago

Hitchcock's Machine Tool Blue Book

**Selected
Circulation**

**20,000
Monthly**

MARCH, 1935

THIRTIETH YEAR

A Hint—But a Good One

Now that the famous "gold clause" decision is a thing of the past, let's get busy.

Now is the time for manufacturers of metal-working machinery to increase their sales efforts and to take advantage of the "pulling power" of the BLUE BOOK in their advertising.

It covers the responsibly-rated buyers of the country in a way that we do not believe can be surpassed. And it delivers the goods.

It affords, we believe, more real practical advertising for the money than any other publication in its field.

Suppose you try it out. We predict you will be glad you did.



Published By

Hitchcock Publishing Co.

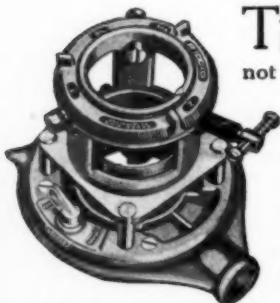
508 S. Dearborn St.,

Chicago, Ill.

Consult the Classified Finding Index for your requirements

A SURPRISING DIFFERENCE

and it makes the **RIGID** Poster Threader
surprisingly **BETTER**



No. 1R one handle.
Also made 2 handles.
For 1" to 2" Pipe.

THE new **RIGID** Poster Threader is not only different but much better — as rapidly growing sales indicate. Design is ingenious and sound. Full-floating posts carry no load. Direct drive over chasers — greater precision. Chaser

locks safely enclosed. Ratchet lever snaps into exact position; workholder sets to size mechanically. Alloy tool steel chasers fit any poster threader. *Ask your Jobber.*



The Ridge Tool Co., Elyria, O., U. S. A.

RIGID

Super-Performance

Pipe Wrenches

Cutters

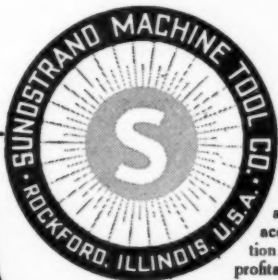
Threaders

Vises



BENCH CENTERS

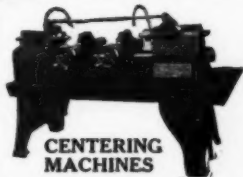
Save time and money in tool-rooms, inspection departments, repair shops, production departments and garages. Accurate, compact, portable. Adjustable heads. Quick-acting spindle. Seven sizes. Low price. *Write, today, for details.*



BALANCING TOOLS

Made in 5 sizes, with capacities from 800 lbs. to 24,000 lbs. Others for propellers, flywheels, pulleys, etc.

No. 56 illustrated, others available. Fast, accurate, an operation saver, a mighty profitable investment.



CENTERING MACHINES

These Sundstrand tools, like our Lathes and Milling Machines, cut costs and make work easier. * * *
INVESTIGATE! Address our Dept. H for details.

FOOTBURT



A Single Spindle Footburt Sipp Sensitive Drill

**Made in three
sizes of single
and multiple
spindle models**

More holes with this machine

Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

Write for No. 650 Folders

The Foote-Burt Company, Cleveland, O.

FOOTBURT

KRW Hydraulic and Sensitive ARBOR PRESSES

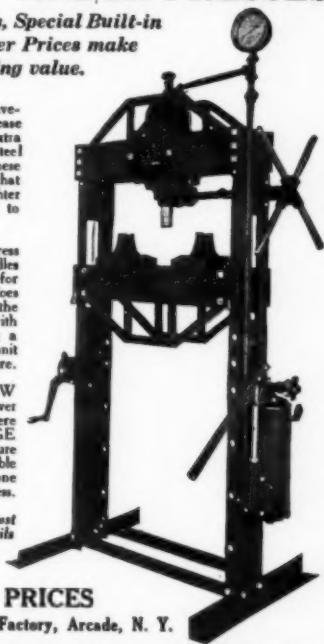
New Improvements, Special Built-in Features and Lower Prices make them an outstanding value.

THE last word in convenience, efficiency and ease of operation. Built extra strong and well braced, with steel trusses electrically welded, these presses will withstand strains that would cause presses of lighter and inferior construction to buckle or collapse.

Hand wheel for sensitive press operations has sliding handles which pull out to the ends for increased leverage. Work does not have to be changed from the work table as is the case with other make presses having a separate sensitive press unit mounted on the side or elsewhere.

The importance of this KRW feature as a time and labor saver can be appreciated. Also there is **NO EXTRA CHARGE** for this important built-in feature on a KRW Press. Work table can be raised easily with one hand. A strictly one-man Press.

Write for special circular, just off the press, giving full details and specifications of all KRW Arbor Presses.



PRICES

F. O. B. Factory, Arcade, N. Y.

- | | |
|---|----------|
| No. 37—35 ton Hydraulic and Sensitive Arbor Press (hand operated) | \$128.00 |
| No. 37B—35 ton Hydraulic and Sensitive Arbor Press (air-oil operated) | 128.00 |
| No. 37E—50 ton Hydraulic and Sensitive Arbor Press (hand operated) | 150.00 |
| (Can also be furnished in air-oil operated at same price) | |
| No. 37F—70 ton Hydraulic and Sensitive Arbor Press (hand oper. only) | 275.00 |
| Gauge and fittings, \$15.00 extra on all presses. | |

K. R. WILSON

10-16 Lock Street, Buffalo, N. Y., U. S. A.

EXPORT DEPARTMENT

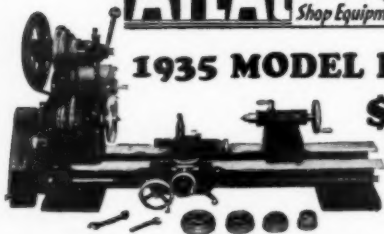
90 West St., New York, N. Y.

WEST COAST BRANCH

722 Mateo St., Los Angeles

ATLAS QUALITY

Shop Equipment Since 1911



1935 MODEL LATHE

\$87.50

Complete



A larger, more powerful lathe for 1935—a lathe that will do a real job on everything it tackles. Complete screw-cutting, back-gear, integral drive. 16 speeds. 10" swing, 24" between centers. Heavy, sturdy back gears give this lathe tremendous power. In our own shop we have repeatedly reduced the diameter of a 3" cold-rolled steel bar **three-quarters of an inch** in a single cut. Self-contained countershaft—ready to run. Automatic, reversible feeds. Graduated compound rest. Other sizes up to 54" between centers.

Send for free catalog

ATLAS PRESS COMPANY

1850 N. Pitcher St., Kalamazoo, Mich., U. S. A.

Name.....

Address.....

City.....State.....

**Send For This
FREE CATALOG**

of

metal lathes, drill
presses, attach-
ments, also arbor
presses.



Fractional H. P. Reducers

1/10 to 1/2 h. p.—Ratios 5 1/4: 1 to 100: 1

Send for Circular

Abart

Gear and Machine Co.
4832 W. 16th St., Cicero, Ill.

Put Production Jobs on one of these Drills

1 to 6 Spindles—Bench or Floor

Designed from the base up for production work, Buffalo 16-inch Drills feature ease and speed in handling. Interchangeable unit parts with individual motor drives provide flexibility in arrangement. Special applications requiring unusual distance from spindle nose to table can be handled easily by substituting longer column in any type, bench or floor. Head operates equally well horizontally, inverted or at an angle. Speeds cover the usual run of work within the capacity of this machine, ranging from 3000 r. p. m. for $\frac{1}{2}$ " drills to 400 r. p. m. for $\frac{3}{4}$ " drills. Electrical equipment is suited to application. Horsepowers from $\frac{1}{2}$ to $\frac{3}{4}$ may be used, on any current characteristics. V-belts and sheaves provide smooth drive without strain on bearings.

All details of mechanical construction are superior. Spindle pulley is carried on steel sleeve, rigidly mounted on two large ball bearings in the head casting, thus there is no radial load on the alloy steel spindle, which runs on two ball thrust bearings, sealed against dust and oil splashing.

The Buffalo 16-Inch Drill has all the essentials for fine performance, durability and accuracy. Efficient design keeps first cost down.

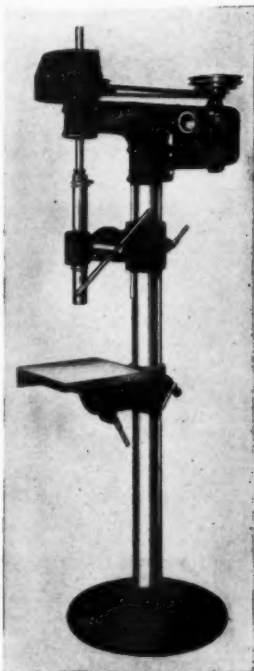
Send for your copy of Bulletin 2730 which gives complete details.

Buffalo Forge Co.

161 Mortimer St. Buffalo, N.Y.

"Buffalo"

**16-Inch Ball Bearing
Production Drills**



New Booklet Gives Complete Information On Carboloy



Carboloy Company, Inc., Detroit manufacturers of cemented carbide tools, are now distributing a new, 36-page booklet "Complete Information on the Profitable Use of Carboloy Tools" which will be of interest to both present users and prospective users of cemented carbides.

Briefly, this new booklet contains in detail the following information: (1) Detailed description of the six major benefits users can obtain from Carboloy tools, i. e., higher speeds, longer tool life, better finish, greater accuracy, machining of harder materials, and the reduction possible in machining allowances for castings machined with Carboloy. (2) An explanation as to the size of plants which can use Carboloy profitably. (3) An outline of what educational work, equipment etc., are necessary to start using Carboloy tools. (4) Detailed description of the four ways in which Carboloy may be purchased, with information enabling the user to select the most economical method for his particular requirements. (5) Complete operation and design recommendations. (6) Detailed explanation of the service the user can expect from Carboloy representatives. (7) Illustrations and description of the materials Carboloy tools can economically machine, types of tools now being tipped with Carboloy, and operations which are successful with this tool material. (8) Physical characteristics of Carboloy. (9) Applications of each Carboloy grade, including a description of the uses of several new grades. (10) A listing of all tool and machine manufacturers licensed to supply their tools equipped with Carboloy.

The above general information is supplemented by 10 pages showing in illustrated form the complete manufacturing process of Carboloy cemented carbide from the raw tungsten ore through to the finished tools. This section generously illustrates several phases of the manufacturing process—such as, for example, the forming of Carboloy blanks in the soft state—which have never before been published in detail.

This booklet SC-35 is intended to supplement a new 1935 Catalog now being prepared. It is recommended to all plants interested in an answer to all questions concerning the use of Carboloy tools. Copies of booklet SC-35 may be obtained from Carboloy Company, Inc., 2985 East Jefferson Avenue, Detroit, or any of its branches.

Mall
TRADE MARK

Flexible Shaft Grinders For All Industries

such as

Automotive and General
Manufacturing Plants

Tool and Die Shops

Foundries, Etc.

A type and size for every
application.

Bulletins on request



MALL TOOL COMPANY

7742 South Chicago, Ave.,

Chicago, Illinois

ARMSTRONG

TRADE MARK REG. IN U.S. PAT. OFFICE

THREADING TOOLS



**Spring
Threading Tool**

**Threading
Tool**

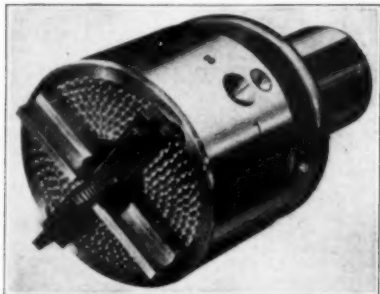
The "goose-neck" form of the ARMSTRONG SPRING THREADING TOOL gives it a resiliency that assures a smooth thread or finishing cut on even the toughest alloy steel.

With the ARMSTRONG THREADING TOOL anyone can cut perfectly fitting threads, for the high speed steel Form Cutters always retain their true shape—require only flat top grinding to re-sharpen.

Write for **ARMSTRONG BROS. TOOL CO.**

New Catalog "The Tool Holder People"
308 N. Francisco Ave., CHICAGO, U. S. A.

A New National Acme Product



A new Interchange Chaser Blade and Holder is announced by The National Acme Company of Cleveland, Ohio.

Rigid in construction, designed to meet the needs of threading jobs where changes from one job to another are frequent, precision and simplicity of design were uppermost in the minds of the designers.

The blade chaser slips into a slot in the block, protruding on each end. On one end are the threads of the chaser with the ground cutting edge; on the other end is ground a heel or cam which is seated snugly in the cup and assures accurate opening action.

By building the cutting edge and the heel into one blade, correct location of cutting edge is secured, and each chaser will take the same depth of chip, which is essential for accuracy of lead.

The blade is wider than the depth of the slot making more grinds possible. They are made of the finest high speed steels and fastened to chaser holding block with two hollow hex screws.

Only two sets of blocks required for entire range of cutting sizes.

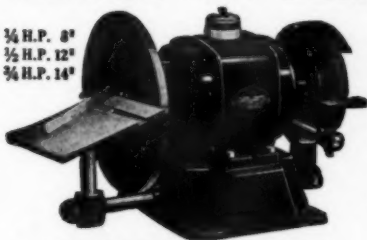
These chasers and blocks are interchangeable in the dies with the circular chasers and holding blocks of corresponding die size, in the rotating or non-rotating series.

Stockable sizes available from $\frac{1}{4}$ " to 1".

Please say "Blue Book" when writing to advertisers.

Winterhoff MOTOR DRIVEN Portable Tools

$\frac{1}{4}$ H.P. 8"
 $\frac{1}{2}$ H.P. 12"
 $\frac{3}{4}$ H.P. 14"



Double End
 Grinders
 Double End
 Disc Grinders
 Combination
 Tool & Disc
 Grinders

Repulsion Induction Motor

The most economical and accurate method of producing true surfaces in production and tool room. Discs are two-sided and reversible. Completely equipped for the job. Repeat orders tell the story.

Write Your Dealer or Direct to Us for Information

WINTERHOFF TOOL & MACHINE CO.
 109 South Elkhart Ave., Elkhart, Indiana



WADE KNURLING TOOL

Also Precision
Bench Lathes

Wade Tool Co.
 Waltham, Mass.

EISLER SPOT WELDERS

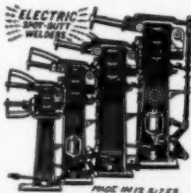
$\frac{1}{2}$ TO 100 K. V. A.

ELECTRIC SAW BRAZING MACHINES, BUTT,
WIRE, PORTABLE AND SPECIAL WELDERS

Welders as low as \$35.00

Submit Samples for Test. No Obligation

EISLER ENGINEERING CO., Inc.
 746 So. 13th St. NEWARK, N. J.
 DEALERS WANTED. Write Chas. Eisler, Pres.



Signal Announces A New Drill

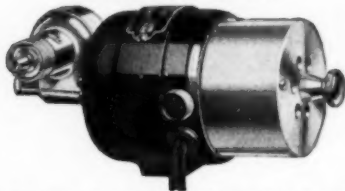
The Signal Electric Mfg. Co., Menominee, Michigan, manufacturers of electrical appliances, have announced a new $\frac{1}{4}$ " standard duty portable electric drill, shown in the illustration. This is the second one recently brought out by the Signal Company, and is known as Type OB-4.



The length overall is 12". Net weight, 7 $\frac{1}{4}$ lbs. The motor is a Signal universal for D. C. or A. C., 110-120 volts. 25-60 cycles. Speed, no load, 1700 R. P. M.

Further specifications are; housing, durable aluminum alloy; bearings, bronze, wool packed, with thrust ball bearing on spindle shaft; gears, special alloy, heat-treated; chuck, Almond 3-jaw, with key; switch, toggle positive make and break; brushes accessible from outside. Equipped with 8 ft. of heavy duty rubber covered cord, with rubber cord protector, and rubber plug.

Dumore Motors Now Available with Electric Governor



The advantage of constant speed is combined with the light weight and power of series universal motors in the new types of Dumore electric governor controlled motors.

Two types of governors are offered—the adjustable type on which the speed can be varied while the motor is in operation, and the fixed type which can be adjusted only when the motor is at

(Continued on Page 16)

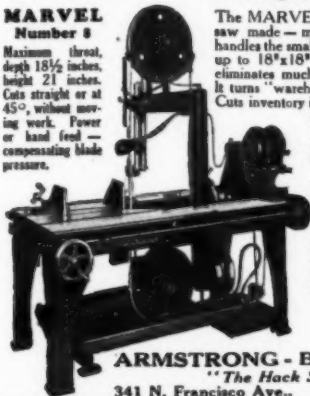
CUTS — Metal to 18' by 18'

— Hours to Minutes

— Cutting-Costs to a Fraction

MARVEL Number 8

Maximum throat,
depth 18½ inches,
height 21 inches.
Cuts straight or at
45°, without mov-
ing work. Power
or hand feed —
compensating blade
pressure.



The MARVEL No. 8 is the most universal saw made — makes every type sawing cut, handles the smallest most delicate job or big work up to 18"x18". It cuts to size and shape — eliminates much tedious shaping and roughing. It turns "warehouse cutting extras" into profits. Cuts inventory investment, for with a few stock sizes you can cut your own die plates, etc. It will end costly delays; will keep other machines running.

In tool rooms, die and general machine shops you will find the MARVEL No. 8 the busiest machine tool on the floor. Its speed, accuracy, easy operation, and all-around utility keeps it building profits in innumerable ways.

Write for Bulletin

ARMSTRONG - BLUM MFG. CO.

"The Hack Saw People"

341 N. Francisco Ave.,

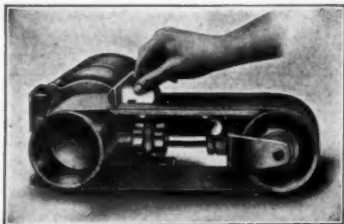
CHICAGO, U. S. A.

PRODUCTION No. 601 ELECTRIC POLISHER

**SAVES A LOT
OF TIME—**

**Smoothing-up
Surfacing
Polishing or
Burring
Small Work**

Its' Handy



Its' furnished complete with Motor and Cord ready to plug in your socket.

Lowest Priced Belt Surfacar of Its Size.

WRITE

Production Machine Co., Greenfield, Mass.

standstill. Three sizes each of the two types are available for controlling the speed of Dumore Motors rated $1/64$ to $1/2$ H. P. over a range of approximately 1000 to 7500 RPM.

The motor illustrated is type XL— $1/25$ H. P. with Model CR 2^a adjustable type governor.

Dumore Electric governor controlled motors are especially well adapted for operating the new portable talking motion picture projectors, scientific instruments, apparatus where quick acceleration is required, yet where constant speed under varying load is necessary. The governor also serves to hold the motor speed constant, regardless of minor fluctuation in line voltage.

To determine whether an electric governor controlled Dumore motor is practical for your application, write The Dumore Company, Racine, Wisconsin, giving such information as the type of equipment on which the motor is to be used; the load; duty cycle; speed range; allowable speed variation; current—A. C., D. C., or both; voltage, and whether the device is portable or stationary.

The Blueprinter

A Blueprint Machine which utilizes the new Angstrom Blueprint Lamp has been placed on the market by Milligan & Wright Company; 4613 Prospect Ave., Cleveland, Ohio.

The Angstrom Lamp used in this machine is of the incandescent type, which it is claimed offers many advantages over the conventional arc and mercury vapor lamps. It operates from the regular 110-115 D. C. or A. C. lighting circuit without the need of transformer choke coils, etc. It differs from the ordinary incandescent lamp in the quality of light produced, being stronger in the blue end of the spectrum.



The Model 100 pictured above is the portable table type, which will print one 18x24 or two 12x18 or four 9x12 prints at one time.

(Continued on Page 18)

Gem Drill Press



Made
In
3-sizes
Up To
10½"

Vise

Milling Machine



Vise

Jaws open 6¾"

Plain & Swivel Base Vise

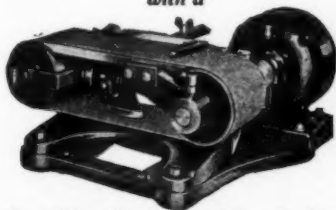
J.E. Martin Tool & Die Works

528 W. State St.,

SPRINGFIELD, OHIO

Abolish Expensive Hand Finishing

with a



Simplex-M Abrasive Band Grinder

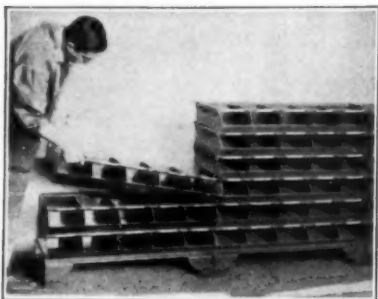
This Grinder accelerates production and cuts costs. Hand emerying or filing operations are antiquated in comparison. The use of this new modern machine assures straight grain finishes with sharp edges. *Details of this and other styles and sizes on request.*

WALLS SALES CORP., 96 Warren Street
NEW YORK

To make a print it is only necessary to place tracing and paper on the plate glass top, lower the pressure pad and close the cover. The springs in the cover act on the pressure pad, assuring good contact between tracing and paper. The automatic time switch is turned on and set for about one minute exposure. (The length of exposure depends on the speed of paper used). When the time switch clicks off remove the print and wash it in water and potash solution in trays provided for this purpose. The print is then dried on a special drying board furnished with the machine.

Additional features are that one print can be made as economically as a dozen; it can be operated by anyone without danger of accident or fire, and no special electrical equipment is required—just plug it in any where.

The New Stackbin Section



The Stackbin Corporation, Providence, R. I., are now marketing their new Stackbin Section, which is designed so that one Section rests deeply into the other. When several are placed one on top of the other they provide a substantial unit. Building a stockroom with them is as easy as setting up a sectional bookcase.

As Sections are not bolted together they can be easily moved, so that it is a simple matter to rearrange the stockroom. And, being easily portable, they lend themselves to setting up a temporary stockroom near the job on large assemblies or on outside construction.

(Continued on Page 20)

TAPPING DEVICES

HAVE BEEN OUR SPECIALTY FOR OVER 25 YEARS

NOW THE NEW "PROCUNIER"

**SENSITIVE
HIGH SPEED**

FRICTION DRIVE
At Spindle Speed

**TAPPING
ATTACHMENT**

FRICTION REVERSE
At Twice Spindle
Speed

BALL

*Also other sizes
and styles*



BEARINGS

*Write for our catalog
with prices*

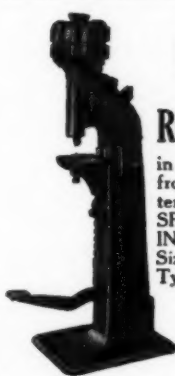
PROCUNIER SAFETY CHUCK CO.

14 S. Clinton St.,

•••

•••

Chicago, Ill.

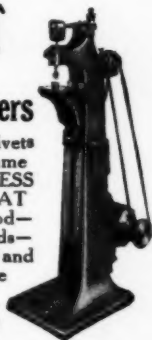


GRANT

Riveters—Pioneers

in their line—Head rivets
from smallest to $\frac{1}{2}$ " diame-
ter either by NOISELESS
SPINNING or VIBRAT-
ING HAMMER method—
Sizes to meet all needs—
Types include Vertical and
Horizontal Multiple
Spindles.

*Write for literature—and
don't forget to send
samples.*



The Grant Mfg. & Machine Co.

C. E. Station,

Bridgeport, Conn.

The large and small sections fit together, which makes it possible to use large bins at the bottom and smaller Sections at the top. As the backs are flat, they can be set up back to back, if desired.

These Sections are made in four convenient sizes, of heavy gauge metal.

Complete information may be obtained from the manufacturers.

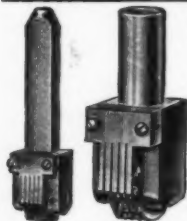
A New and Improved Precision Adjustable Spacing Collar

The Dayton Rogers Manufacturing Co., Minneapolis, Minn., announce a new adjustable spacing collar for milling machine cutter arbors, designed for accurate spacing of side milling cutters, gang milling, and various other multiple milling setups. This adjustable spacing collar lends itself readily to close accurate work, and may be adjusted by thousandths by merely loosening the cutter arbor nut. The collars are graduated in thousandths; however, a quarter thousandth graduation is easily obtained—assuring you precision positive adjustment at all times.



**Six Piece
Micrometer
Set with Leather Case
\$9.95**

**Plus Postage
Guaranteed Accurate
Bradley Mch. Co.,
6500 Epworth St., Detroit**



Mark it—QUICKLY with a Numberall Machine

Stamp in perfect alignment. Made with 1 to 8 wheels. Shank for Hand or Press Stamping. Latest Hardening and Engraving Methods insure sharp figures and long service. We also make Steel Stamps, Trade Mark Stamps, etc. of superior quality.

Write for Circulars and Prices.

**Numberall Stamp & Tool Co.
Huguenot Park, Staten Island, N. Y.**

Many Types and Sizes

TYPE RF-M4-1/4 H. P.



ROTARY FILES

Strand

Flexible Shafts And Machines

For

Tool and Die Makers
Metal Patternmakers
Machine Shops
Foundries and All General
Manufacturing Plants.

Sixty Types and Sizes—1/8 to 2 H. P.

N. A. STRAND & CO.
MANUFACTURERS

5001-5009 North Lincoln Street,

CHICAGO, ILL.

HANDEE

Tool of 1001 Uses

Grinds, routs, drills, carves, sharpens, cuts, engraves. Over 100 wheel shapes available. Fits the hand perfectly. Weighs 1 pound. *For use at home, in the shop or take to the job. Do away with slow hand work!* A.C. or D.C. 110 volt, 13,000 r. p. m. Order on 5-day trial. Satisfaction guaranteed



*Plug
in any
light
socket*

\$10.00

and up
Postpaid
U. S. A.

With 3 wheel
shapes Free.
Order today.

Ask for
FREE
Booklet

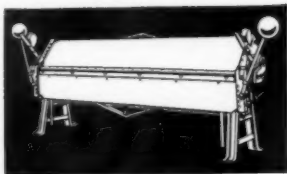
New

**MASTER CRAFTS-
MAN'S SET**

17 useful accessories to
grind, drill, polish, sand,
cut, carve, engrave, etc.
Prepaid,.....\$5.00

CHICAGO WHEEL & MFG. COMPANY
116 S. Aberdeen St.,
Chicago, Ill.

Chicago Steel Brakes



For 30 years the
Standard of the
World.

Over 30,000 in use.

Made in over 100
standard sizes.

Special Hand and Power Brakes Built for Irregular Work.
Submit Your Sheet Metal Bending Problems To Us.

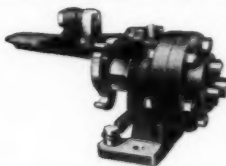
DREIS & KRUMP MFG. CO.

7440 Loomis Blvd.,

CHICAGO, ILL.



Lever Operated



Foot Operated

Also Solenoid Operated

Two, Three and Fourway Valves

It may be a simple matter to change a leather washer in an air valve to stop a bad leak, but it isn't the cost of the change that is important, it is the cost of the air lost during the weeks prior to the change. Further, this air loss and leather washer change in some makes of valves continues on year in and year out. Nicholson Valves are made of non-corrosive metals, are soap bubble tight, and remain so over periods as long as six years without maintenance of any kind.

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The "Champion" is made by experts, for long life and the best service. The only dresser that runs in an oil bearing.



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A New Luminescent Paint

"Dialux" is a new luminescent paint being marketed by the Grobet File Corporation of America. Its principal element is sulphur of calcium, a phosphorescent salt.

Sulphur of calcium has this peculiar quality, that after having been exposed to natural or artificial light, even for a very short space of time, it gives off, in the dark, a luminosity which lasts for 12 hours. The glow is very brilliant during the first 15-20 minutes following the exposure to light, then gradually fades away. Dialux paint is permanent. The luminescence of painted articles can be restored time and again by simply repeating the exposure to light. In other words, the sulphur of calcium acts as an accumulator of light. Like every accumulator, after 16 hours the sulphur of calcium can be considered as discharged, but on being reexposed to light for a few seconds (20-30) it will recharge.

It can be applied on everything and everywhere, on metal, glass, cloth, paper, wood, hard rubber compositions. "Dialux" is made in two varieties—1, for brush application (resin carrier); 2, for air gun spray application (enamel carrier). Both varieties dry quickly, and are of very high mechanical resistance—not destructive, but protective.

The chief value of "Dialux" consists in indicating the position of objects in complete darkness. It can be used to advantage in factories on fire extinguishers, parts of machinery, hydrants, projecting beams, staircases, dangerous dark corners—a feature that should be especially interesting to employers who wish to protect their employees against hazard.

The Grobet File Corporation of America, 3 Park Place, New York City, will furnish more complete information upon request.

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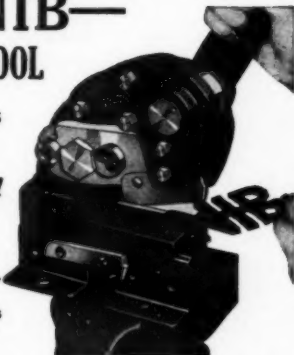
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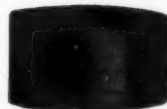
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*Large stock of regular sizes
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**The manufacturers will be pleased to
send full information upon request**

The Porter-Cable Machine Co., Syracuse, N. Y., has added a Type B-12 Bench Model to its line of Belt Sanders and Grinders. It employs a 6x43 inch abrasive belt for sanding or grinding flat surfaces on metal, wood, composition materials, marble, slate and stone. Any belt speed up to 4000 feet a minute can be provided.

The Master Brake & Appliance Co., Inc., Trousdale, Kansas, has placed on the market what is appropriately called a "Lathe Converter." It is a motor-driven unit that can be conveniently applied to lathes for performing milling, grinding, drilling and broaching operations, converting the lathe into a universal machine.

The Lincoln Electric Co., Cleveland, Ohio, has developed an arc-welding electrode for restoring cutting edges on tools of all kinds. The Toolweld electrode, as it is called, refaces lathe tools, bits, milling cutters, drills, cutting and forming dies, and other worn tools an unlimited number of times.

The Ideal Electric & Manufacturing Co., Mansfield, Ohio, have developed an Arc Welder featuring unity power-factor motor drive, 10 to 15 per cent better over-all efficiency, and an extremely fast arc. It will maintain its current and voltage settings when started up cold and run full load for any period.

The Farrel-Birmingham Co., Inc., Ansonia, Conn., have designed a new 36 in. by 12 ft. Rolling Grinder for rolling metal strip and sheet material used in the fabrication of automobile bodies, refrigerator cabinets, furniture, etc., with a high finish and free from any marks. Rolls that formerly required from five to six hours are now being finished in two hours, free from marks of any kind.

The Hendey Machine Co., Torrington, Conn., have a 12-in. Crank Shaper which is a high-speed cutting tool. On a 6-in. stroke it has a maximum cutting speed of 182 ft. per min., and on a 12-in. stroke a high cutting speed of 120 ft. per min. It also has an ample range of slower speeds, with a minimum of 23 ft. per min. on 12-in. stroke and 45 ft. per min. on 2-in. stroke.



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Uses Abrasive Wheels or Saws, and instantly swivels and cuts any angle from 45° left to 45° right, doing clean, instantaneous work on metal bars, shapes or tubes.

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THEY are usually known among mechanics as lathe mandrels, but they work equally as well on millers or grinders. They also will take a job with a square hole as well as a round one. *Write Us for Further Information.*

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in your tool room or stamping shop, one man will handle dies that formerly required two to three men to lift. Send for our illustrated circular and see for yourself the many jobs to which this handy tool adapts itself.

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Hamilton, Ohio, U. S. A.

New Equipment Tabloids—Continued

The Link-Belt Co., Chicago, Ill., announce a line of motorized helical gear reducers, a special feature of which is the accessibility of the motor and the high-speed gears. They may be mounted on floor, ceiling or wall, and are available in double reduction for $1\frac{1}{2}$ to 75 h.p. in ratios up to $38\frac{1}{2}$ to 1, and in triple reductions up to 30 h.p. in ratios up to 292 to 1.

The Nicholson File Co., Providence, R. I., are introducing a new line of "Superior Brand" Files, consisting of fifteen different designs. A feature is the curved teeth with a rake and clearance selected to insure rapid cutting by shearing off the surface of metals. They are made in both rigid and flexible types. The flexible files are designed for use with special handles on either concave or convex surfaces. They are particularly useful on automobile body work.

The Charles L. Jarvis Co., Gildersleeve, Conn., are prepared to ship a set of their three Jarvis Biax Tapping Attachments, all packed in a steel box. The set includes the No. 0 which taps from No. 2-56 thread to $\frac{1}{4}$ in., the No. 1 which taps from $\frac{3}{8}$ to $\frac{1}{2}$ in., and the No. 2 which taps from $\frac{1}{4}$ in. to $\frac{3}{4}$ in. The cost of the set, packed in the steel tool box, is less than if the three attachments were purchased separately.

The Morton Manufacturing Co., Muskegon Heights, Mich., have a new High Duty Draw-Cut Flash Trimming Machine for removing the flash from butt welded steel rings, such as automobile wheel rims. It takes a width of seam up to 12 inches and stock thickness from 24 gauge to $\frac{3}{8}$ inch.

The Cross Gear & Machine Co., 3250 Bellevue Ave., Detroit, Mich., have developed three new gear-tooth finishing machines—the Cross No. 35 Gear-Tooth Rounder, the No. 40 Gear-Tooth Pointer, and the No. 50 Gear-Tooth Chamfering Machine. These new machines are fully hydraulic.



This Standard Duty Signal $\frac{1}{2}$ " drill has power, is well-balanced, light in weight—backed by the Signal name.

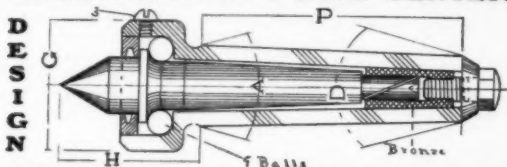
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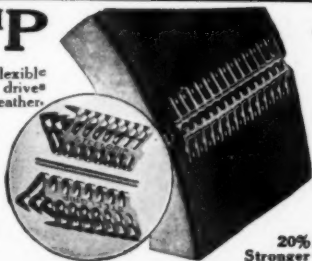
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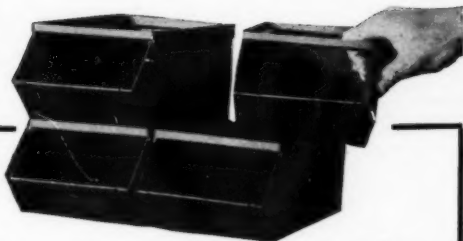
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(Give both names and titles)

Figure 1. Schematic diagram of the experimental setup. The experimental setup consists of a laser source, a beam splitter, a lens, a mirror, and a detector. The laser source emits a beam of light that is split into two paths by the beam splitter. One path goes through a lens and a mirror, and the other path goes through a lens and a detector. The two paths are recombined by the beam splitter, and the resulting beam is detected by the detector.

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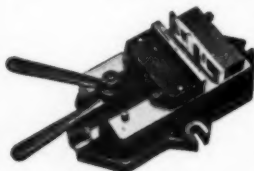
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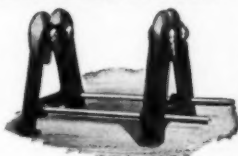
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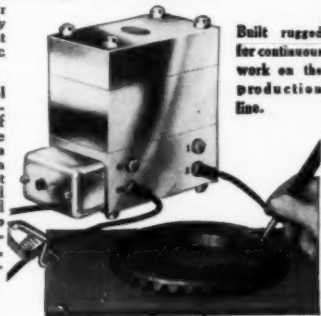
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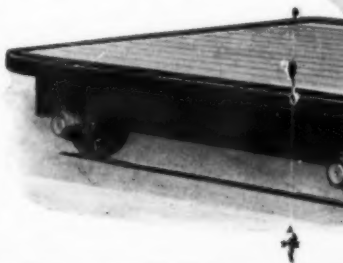
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**JOSEPH T. RYERSON & SON
INC.**

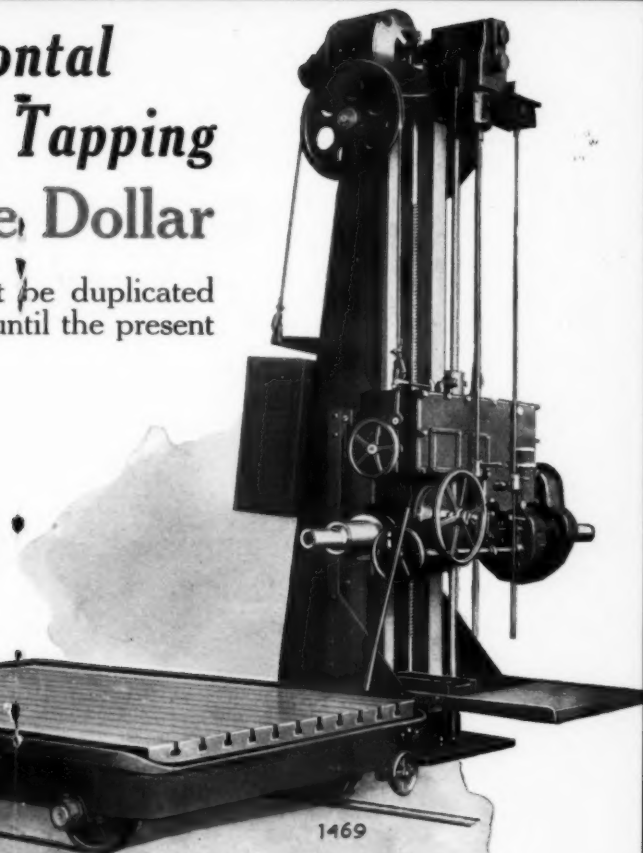
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RYERSON MACHINERY

ontal Tapping e Dollar

It be duplicated
until the present



RY Ryerson Machinery also includes Combination Shear, Punch and Copers in a full range of sizes, Serpentine Shears, Friction Saws, Punches, Angle and Plate rolls; Bar, Angle, Plate and Sheet Shears, Bulldozers, Lathes, etc. WRITE FOR DESCRIPTIVE LITERATURE.

Classified Finding Index

Abrasive Cut-off Machines

Tannowitz Works, Grand Rapids, Mich.

Arbor Presses

Atlas Press Co., Kalamazoo, Mich.
Witson K. R., Buffalo, N. Y.

Balancing Ways

Anderson Bros. Mfg. Co., Rockford, Ill.
Sandstrand Machine Tool Co., Rockford, Ill.

Band Saw Machines, for Metal

Armstrong-Bloom Mfg. Co., 341 N. Francisco
Av., Chicago
Tannowitz Works, Grand Rapids, Mich.

Bar Cutters

Buffalo Forge Company, Buffalo, N. Y.

Belt Lacing

Armstrong-Bray & Co., 315 N. Sheldon St.,
Chicago, Ill.

Belt Sanders, Portable Electric

Skilaw, Inc., 3317 Elston Ave., Chicago

Bending Machines, Hand and Power

Armstrong-Bloom Mfg. Co., 341 N. Francisco
Av., Chicago
Buffalo Forge Company, Buffalo, N. Y.
Leathwaite Mchs. Co., T. H. 311 E. 47th, N. Y.
Hyerson & Son, Jon. T., 2556 West 16th st.,
Chicago, Ill.

Bins

Stacklin Corp., Providence, R. I.

Blowers

Meyer Blower Co., Wm. W., 1045 West
Washington Blvd., Chicago, Ill.

Blowers, Portable Electric

Skilaw, Inc., 3317 Elston Ave., Chicago

Bolt and Nut Machinery

Foster-Burt Co., Cleveland, O.

Boring Bars

The Rigid Toolholder Co., Detroit, Mich.

Boring Heads

Flynn Manufacturing Co., Detroit, Mich.

Brakes, Hand and Power

Dreis & Krump Mfg. Co., 7445 So. Loomis
Hv., Chicago, Ill.

Burr, Steel

White Dental Mfg. Co., S. S., 152 W. 42nd
St., New York City.

Bushings, Steel

Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.
Baumbach Mfg. Co., E. A., 1812 So. Kil-
bourne Ave., Chicago

Bushings, Jig

Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.

Castings, Bronze

White Dental Mfg. Co., S. S., 152 W. 42nd
St., New York City

Centering Machines

Sandstrand Machine Tool Co., Rockford, Ill.
Chicago Gear Works, 769 W. Jackson Blvd.,
Chicago, Ill.
Cullman Wheel Co., 1859 Altgeld St., Chgo.

Chains, Silent and Roller

Chicago Gear Works, 769 W. Jackson Blvd.,
Chicago, Ill.
Cullman Wheel Co., 1859 Altgeld St., Chgo.

Chamfering Machines, Automatic

Grant Mfg. & Mchs. Co., Bridgeport, Conn.

Chucks

Heuser Mfg. Co., 1638 No. Paulina St.,
Chicago, Ill.

Chucks, Automatic

Procurier Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Collet

Procurier Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Drill and Tap

Hartford Special Mch. Co., Hartford, Conn.
Procurier Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Quick Change

Procurier Safety Chuck Co., 14 So. Clinton
St., Chicago

Chucks, Ring Wheel Grinder

Graham Manufacturing Co., Providence, R. I.

Cold Saws

Burke Machine Tool Co., Conneaut, Ohio

Collets

Wade Tool Co., Waltham, Mass.

Contract Work Wanted

Burke Machine Tool Co., Conneaut, O.

Couplings, Compression Shaft

W. H. Nicholson & Co., Wilkes-Barre, Pa.

Couplings, Flexible

W. H. Nicholson & Co., Wilkes-Barre, Pa.

Couplings, Shaft

W. H. Nicholson & Co., Wilkes-Barre, Pa.

Cut-off Saws

Tannowitz Works, Grand Rapids, Mich.

Demagnetizers

Luma Electric Equipment Co., Toledo, Ohio

Diamonds, Industrial & Rough

Mendes Cutting Factories, Inc., 505 Fifth
Ave., New York City

Diamond Pointed Tools

Mendes Cutting Factories, Inc., 505 Fifth
Ave., New York City

Dies, Blank and Forming

American Tool Works, Inc., Hartford, Conn.
Hamilton Tool Company, Hamilton, Ohio
Wade Tool Co., Waltham, Mass.

Die Sets

Baumbach Mfg. Co., E. A., 1812 So. Kil-
bourne Ave., Chicago

Disc Grinders

Winterhoff Tool & Mchs. Co., Elkhart, Ind.

Dowel Pins, Steel

Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.
Baumbach Mfg. Co., E. A., 1812 So. Kil-
bourne Ave., Chicago

Drills, Bench

Winterhoff Tool & Mchs. Co., Elkhart, Ind.

Drills, Electric

Signal Electric Mfg. Co., Menominee, Mich.
Skilaw, Inc., 3304 Elston Ave., Chicago
Winterhoff Tool & Mchs. Co., Elkhart, Ind.

Drill Jigs, Special

Heuser Mfg. Co., 1638 No. Paulina St.,
Chicago, Ill.

Drill Jigs, Universal

Heuser Mfg. Co., 1638 No. Paulina St.,
Chicago, Ill.

Classified Finding Index

Drilling Attachments, High Speed
Graham Manufacturing Co., Providence, R. I.

Drilling Machines, Bench
Buffalo Forge Company, Buffalo, N. Y.

Drilling Machines, Multiple Spindle
Foots-Burt Co., Cleveland, O.

Drilling Machines, Portable Electric
Skilaw, Inc., 3317 Elston Ave., Chicago
Strand Co., N. A., 5001 N. Lincoln St., Chicago
White Dental Mfg. Co., S. S., 152 W. 42nd St., New York City

Drilling Machines, Sensitive
Buffalo Forge Company, Buffalo, N. Y.
Burke Machine Tool Co., Cincinnati, Oh
Foots-Burt Co., Cleveland, O.

Drilling Machines, Vertical
Buffalo Forge Company, Buffalo, N. Y.
Foots-Burt Co., Cleveland, O.
Ryerson & Son, Jos. T., 2556 West 16th St., Chicago, Ill.

Drives, Lathe
Collman Wheel Co., 1350 Altgeld St., Chgo.

Electrical Instruments
Illinois Testing Laboratories, Inc., 150 W. Austin Ave., Chicago

Elevating Tables
Hamilton Tool Company, Hamilton, Ohio

Emery Wheel Dressers and Cutters
Western Tool & Mfg. Co., Springfield, O.

Emery Wheel Dressers, Diamond
Menden Cutting Factories, Inc., 505 Fifth Ave., New York City

Etching Machines, Electric
Luma Electric Equipment Co., Toledo, Ohio

Experimental Work
American Tool Works, Inc., Hartford, Conn.

Files, Rotary
White Dental Mfg. Co., S. S., 152 W. 42nd St., New York City.

Furniture, Machine Shop
Western Tool & Mfg. Co., Springfield, O.

Gages, Pin, Plug, Ring and Snap
American Tool Works, Inc., Hartford, Conn.

Gages, Taper
Hartford Special Mch. Co., Hartford, Conn.

Gears
Abart Gear & Machine Co., Cicero, Ill.
Chicago Gear Works, 789 W. Jackson Blvd., Chicago, Ill.

Grinder, Combination Disc
Winterhoff Tool & Mch. Co., Elkhart, Ind.

Grinder, Electric
Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.

Grinder, Flexible Shaft
Mall Tool Co., 7742 S. Chicago Ave., Chicago

Grinder, Hand
Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.
Onsrud Machine Works, Inc., 3900 Palmer St., Chicago, Ill.

Grinder, High Speed
Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.
Mall Tool Co., 7742 S. Chicago Ave., Chicago

Grinding Machines, Belt
Production Machine Co., Greenfield, Mass.
Wall Sales Corp., 96 Warren St., New York

Grinding Machines, Cutter, Reamer and Tool
National Machine Tool Co., Racine, Wis.
Ryerson & Son, Jos. T., 2556 West 16th St., Chicago, Ill.

Grinding Machines, Die
Onsrud Machine Works, Inc., 3900 Palmer St., Chicago, Ill.

Grinding Machines, Internal
National Machine Tool Co., Racine, Wis.
Onsrud Machine Works, Inc., 3900 Palmer St., Chicago, Ill.

Grinding Machines, Portable Electric
Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.
Mall Tool Co., 7742 S. Chicago Ave., Chicago
National Machine Tool Co., Racine, Wis.
Strand Co., N. A., 5001 N. Lincoln St., Chicago
White Dental Mfg. Co., S. S., 152 W. 42nd St., New York City

Grinding Machines, Pulley Finishing
Graham Manufacturing Co., Providence, R. I.

Grinding Machines, Ring Wheel
Graham Manufacturing Co., Providence, R. I.

Grinding Wheels
Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.

Grinding Wheel Dressers, Diamond
Menden Cutting Factories, Inc., 505 Fifth Ave., New York City

Grinding Wheels, Mounted
Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.

Grinding Wheels On Shanks
Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.

Hack Saw Blades
Armstrong-Bum Mfg. Co., 341 N. Francisco Ave., Chicago

Classified Finding Index

Hack Saw Machines

Armstrong-Hlum Mfg. Co., 341 N. Francisco
Av., Chicago
Ryerson & Son, Jos. T., 2556 West 16th St.,
Chicago, Ill.

Hand Saws, Portable Electric

Skilsaw, Inc., 3317 Elston Ave., Chicago

Heads, Boring

Flynn Manufacturing Co., Detroit, Mich.

Jigs and Fixtures

American Tool Works, Inc., Hartford, Conn.
Hamilton Tool Company, Hamilton, Ohio
Hartford Special Mch. Co., Hartford, Conn.

Knurls and Holders, for Turrets

Graham Manufacturing Co., Providence, R.I.

Knurls

Reed Small Tool Works, Worcester, Mass.

Lapping Machines

Onsrud Machine Works, Inc., 3905 Palmer
St., Chicago, Ill.

Lathes Drives

Culman Wheel Co., 1359 Altgeld St., Chgo.

Lather, Bench

Atlas Press Co., Kalamazoo, Mich.
Wade Tool Co., Waltham, Mass.

Lathes, Engine

Ryerson & Son, Jos. T., 2556 West 16th St.,
Chicago, Ill.

Lathes, Manufacturing

Sundstrand Machine Tool Co., Rockford, Ill.

Leader Pins, Steel

Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.

Mandrels, Expanding

W. H. Nicholson & Co., Wilkes-Barre, Pa.
Western Tool & Mfg. Co., Springfield, O.

Micrometers

Bradley Machinery Co., Detroit, Mich.

Milling Attachments

Durke Machine Tool Co., Conneaut, Ohio

Milling Machines, Bench

Hurke Machine Tool Co., Conneaut, Ohio
Sundstrand Machine Tool Co., Rockford, Ill.

Milling Machines, Hand

Hurke Machine Tool Co., Conneaut, Ohio
Sundstrand Machine Tool Co., Rockford, Ill.

Milling Machines, Plain

Hurke Machine Tool Co., Conneaut, Ohio
Sundstrand Machine Tool Co., Rockford, Ill.
Ryerson & Son, Jos. T., 2556 West 16th St.,
Chicago, Ill.

Motors, Polyphase

U. S. Electrical Mfg. Co., 1510 So. Western
Ave., Chicago, Ill.

Motors, Variable

U. S. Electrical Mfg. Co., 1510 So. Western
Ave., Chicago, Ill.

Numbering Machines

Numeral Stamp & Tool Co., Staten Island,
N. Y.

Pins, Leader And Dowel

Acme Industrial Co., 419 N. Carpenter St.,
Chicago, Ill.
Haumbach Mfg. Co., E. A., 1812 So. Kil-
bourne Ave., Chicago

Pipe Cutters

Ridge Tool Co., Elyria, Ohio

Pipe Vises

Ridge Tool Co., Elyria, Ohio

Pipe Wrenches

Ridge Tool Co., Elyria, Ohio

Press Brakes

Dreis & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.

Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.
W. H. Nicholson & Co., Wilkes-Barre, Pa.
Wilson, R. K., Buffalo, N. Y.

Presses, Power

Dreis & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.
Ryerson & Son, Jos. T., 2556 West 16th St.,
Chicago, Ill.

Presses, Punch

Lewthwaite Mch. Co., T. H., 311 E. 47th, N. Y.
Dreis & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.

Profiling Machines

Wade Tool Co., Waltham, Mass.

Pullers, Gear and Wheel

Armstrong-Bray & Co., 315 N. Sheldon St.,
Chicago, Ill.

Punch Press Feeds

Wittak Mfg. Co., 4305 W. 34th Place, Chgo.

Punch, Shear and Bender, Hand

Armstrong-Hlum Mfg. Co., 341 N. Francisco
Ave., Chicago

Punches, Hand

Armstrong-Hlum Mfg. Co., 341 N. Francisco
Ave., Chicago
Buffalo Forge Company, Buffalo, N. Y.
Lewthwaite Mch. Co., T. H., 311 E. 47th,
New York
Whitney Metal Tool Co., Rockford, Ill.

Punches and Dies

Lewthwaite Mch. Co., T. H., 311 E. 47th, N. Y.

Pyrometers

Illinois Testing Laboratories, Inc., 150 W.
Austin Ave., Chicago

Pyrometers, Portable & Stationary

Illinois Testing Laboratories, Inc., 150 W.
Austin Ave., Chicago, Ill.

Ratchets

Chicago Gear Works, 709 W. Jackson Blvd.,
Chicago, Ill.

Reamer Holders

W. H. Nicholson & Co., Wilkes-Barre, Pa.

Classified Finding Index

Riveters, Multiple Spindle

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Riveters, Pneumatic

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Red Cutters

Armstrong-Blum Mfg. Co., 841 N. Francisco
Av., Chicago
Lewthwaite Mch. Co., T.H., 311 E. 47th, N.Y.

Routing Machines

Onsrud Machine Works, Inc., 3000 Palmer
St., Chicago, Ill.

Rubber, To Special Formulas

White Dental Mfg. Co., S. S., 152 W. 42nd
St., New York City

Scraping Machines

Anderson Bros. Mfg. Co., Rockford, Ill.

Shafts, Flexible

Strand Co., N. A., 6001 N. Lincoln St., Chgo.
White Dental Mfg. Co., S. S., 152 W. 42nd
St., New York City

Shaping Machines

Osborne & Sexton Machy. Co., Columbus, O.

Shears, Hand

Armstrong-Blum Mfg. Co. 841 N. Francisco
Av., Chicago
Lewthwaite Machine Co., T.H., 311 E. 47th
St., New York
Ryerson & Son, Jos. T., 2355 West 16th St.,
Chicago, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Shear, Power

Dreis & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.
Ryerson & Son, Jos. T., 2355 West 16th St.,
Chicago, Ill.

Shears, Slicing

National Machine Tool Co., Racine, Wis.
Dreis & Krump Mfg. Co., 7440 Loomis
Bldg., Chicago, Ill.

Special Tools and Machinery

American Tool Works, Inc., Hartford, Conn.
Wade Tool Co., Waltham, Mass.

Speed Reducers

Abart Gear & Machine Co., Cicero, Ill.
Chicago Gear Works, 789 W. Jackson Blvd.,
Chicago, Ill.
Cushman Wheel Co., 1389 Altgeld St., Chgo.

Spot Welding Machines, Speed.

Elser Engineering Co., Inc., Newark, N. J.

Sprockets

Chicago Gear Works, 789 W. Jackson Blvd.,
Chicago, Ill.
Cushman Wheel Co., 1389 Altgeld St., Chgo.

Straightening Machines

Whitney Metal Tool Co., Rockford, Ill.

Stud Setters

Proconier Safety Chuck Co., 14 S. Clinton
St., Chicago

Tap Extractors

Walton Co., Hartford, Conn.

Tap Holders

Proconier Safety Chuck Co., 14 S. Clinton
St., Chicago

Tapping Attachments

Proconier Safety Chuck Co., 14 S. Clinton
St., Chicago, Ill.

Tapping Jigs, Universal

Heuser Mfg. Co., 1638 No. Paulina St.,
Chicago, Ill.

Tapping Machines and Attachments

Burke Machine Tool Co., Conneaut, Ohio
Proconier Safety Chuck Co., 14 S. Clinton
St., Chicago, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Thermometers, Resistance Type

Illinois Testing Laboratories, Inc., 150 West
Austin Ave., Chicago, Ill.

Threading Machines, Automatic, Stud

Grant Mfg. & Mch. Co Bridgeport, Conn.

Threading Tools

Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago
Ridge Tool Co., Elyria, Ohio.

Tool Holders

Armstrong Bros. Tool Co., 308 N. Francisco
Av., Chicago
Rigid Toolholder Co., Detroit, Mich.
Western Tool & Mfg. Co., Springfield, O.

Classified Finding Index

Tools, Abrasive

White Dental Mfg. Co., 9 S., 152 W. 42nd St., New York City.

Tools, Boring

Armstrong Bros. Tool Co., 806 N. Francisco Av., Chicago

Tools, Laths and Planer

Armstrong Bros. Tool Co., 806 N. Francisco Av., Chicago

Tools, Machinists'

Armstrong Bros. Tool Co., 806 N. Francisco Av., Chicago

Tube Flanging Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.

Universal Drill Jigs

Heuser Mfg. Co., 1636 No. Paulina St., Chicago, Ill.

Universal Joints

American Tool Works, Inc., Hartford, Conn.
Boston Gear Works Inc., Norfolk Downs, Mass.

Used and Rebuilt Machinery

Alamo Engine Co., Hillsdale, Mich.
American Machinery Co., Cleveland, Ohio
Atlas Equipment Co., 114 S. Clinton St., Chicago, Ill.
Bernstein, Geo. M., 221 N. Elizabeth St., Chicago, Ill.

Bleas Mfg. & Mch. Co., Springfield Ill.
Brown Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Cincinnati Mch. & Supply Co., Cincinnati, O.
Columbia Machinery Co., Fort Wayne, Ind.
Consolidated Machine Shops, 2822 Fulton St., Chicago, Ill.

Davis Machinery Co., Toledo, Ohio.
Denkle, M. A., Pittsburgh, Pa.
Eastern Machinery Co., Cincinnati, O.
Eyrin Helling & Mch. Co., Elyria, Ohio.
Ewerman & Co., Louis E., 1761 Elation Ave., Chicago, Ill.

Sosley Machinery Co., E. L., 825 Koss St., Chicago, Ill.
Fort Wayne Machinery Co., Fort Wayne, Ind.
Grigsby-Grusow Co., Inc., 5801 Dickens Ave., Chicago, Ill.

Goldman, Harvey H., Detroit, Mich.
Harben Machinery Equipment Co., 80 S. Clinton St., Chicago, Ill.
Hess-Schenck Co., Cleveland, Ohio.
Hill, Clarke & Co., 845 W. Washington Blvd., Chicago, Ill.

Indianapolis Machinery & Supply Company, Indianapolis, Ind.
Interstate Mch. Co., 130 S. Clinton, Chgo.
Iraqois Machinery Co., Buffalo, N. Y.

Johnson & Sons Machinery Co., Wm. C., St. Louis, Mo.
Jones Machine Tool Co., Cincinnati, Ohio.
Kennard-Raffin Mch. Corp., Jersey City, N. J.

Lucas & Son, J. L., Bridgeport, Conn.
McDonald Machinery Co., St. Louis, Mo.
Marr-Galbreath Mch. Co., Pittsburgh, Pa.
Meyer Blower Co., Wm. W., 1045 West Washington Blvd., Chicago, Ill.

Midland Steel Co., 400 South Clinton Street Chicago, Ill.
Midwest Equipment Co., 628 W. Lake St., Chicago, Ill.

Mid-West Machine Tool & Supply Company, Davenport, Iowa

Miles Machinery Co., Saginaw, W. S., Mich.
Moray & Co., 45 Min St., Astoria, Long Island, N. Y.

Noble Machinery Co., 217 Centre St., New York, N. Y.
Norton-Broadway Machinery Co., Cincinnati, Ohio

O'Brien Machinery Co., Philadelphia

Used and Rebuilt Machinery—Cont.

Ott Machinery Sales Co., Detroit, Mich.
Oviatt & Co., D. C. Cleveland, Ohio
Osborne & Sexton Mch. Co., Columbus, O.
Passman Bros., Inc., 705 Washington Blvd., Chicago, Ill.

Pattison Supply Co., Cleveland, Ohio
Reliance Machinery Sales Co., Pittsburgh, Pa.

Reynolds, & Son, Geo. T., Providence, R. I.
Russell Machine Co., Pittsburgh, Pa.
Scott-Sanabach Mch. Co., 4607 W. 20th St., Chicago

Schack, F. A., Forth Wayne Ind.
Segal Machinery Co., 809 W. Lake St., Chicago, Ill.

Stageman Machinery Co., Milwaukee, Wis.
Stockman, John A., Homestead, Pa.

Strong, Carlisle & Hammond Co., Cleveland, Ohio
Sun Machinery Co., 28 Van Buren Street, Newark, N. J.

United Mch. & Supply Co., St. Louis, Mo.
Victor Machinery Co., 128 S. Clinton Street, Chicago, Ill.

Victor Machinery Exchange, 251 Center St., New York City
West Penn Machinery Co., Pittsburgh, Pa.

White Mch. Co., A. D., 108 N. Jefferson St., Chicago
Wiggleworth Mch. Co., Cambridge, Mass.

Winterhoff Tool & Machine Co., Elkhart, Ind.
Wolnick Machinery Sales, 21st & Marshall Blvd., Chicago, Ill.

Valves, Foot, Lever & Solenoid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Vises, Drilling Machine

Armstrong Bros. Mfg. Co., 541 N. Francisco Av., Chicago

Armstrong Bros. Tool Co., 806 N. Francisco Av., Chicago

Graham Manufacturing Co., Providence, R. I.
Heuser Mfg. Co., 1636 No. Paulina St., Chicago, Ill.

Martin Tool & Die Works, J. E., Springfield, O.
Passman Bros. Inc. 705 West Washington Blvd., Chicago, Ill.

Vises, Machinists'

Passman Bros. Inc. 705 West Washington Blvd., Chicago, Ill.

Western Tool & Mfg. Co., Springfield, O.

Vises, Milling Machine

Graham Manufacturing Co., Providence, R. I.
Hartford Special Mch. Co., Hartford, Conn.

Passman Bros. Inc. 705 West Washington Blvd., Chicago, Ill.

Vises, Shaper

Graham Manufacturing Co., Providence, R. I.

Welding Machines, Electric Spot

Esler Engineering Co., Inc., Newark, N. J.

Welding Machines, Resistance

Esler Engineering Co., Inc., Newark, N. J.

Wheel Dressing Diamonds

Mendes Cutting Factorios, Inc., 505 Fifth Ave., New York City

Wheel Fullers

Armstrong-Bray & Co., 315 N. Sheldon St., Chicago, Ill.

Wheels, Grinding

Chicago Wheel & Mfg. Co., M. C. Tool Div., 116 S. Aberdeen St., Chicago, Ill.

Woodworking Machinery

Onsrud Machine Works, Inc., 2900 Palmer St., Chicago, Ill.
Tennewitz Works, Grand Rapids, Mich.

Used and Rebuilt Machinery Section

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of 60 cents a line across the page, each issue, plus \$3.00 for name and address. Minimum charge, \$6.00. No display permitted.

Write directly to those offering the machines for sale, for prices and full descriptions. If what you seek is not advertised, use the blank enclosed to make known your wants in either new or used machinery and the publisher will pass them along to the advertisers.

FOR SALE BY

The Wade Tool Co., - - - - - **Waltham, Mass.**
GEAR HOBBER.

Barber-Colman No. 2 gear hobber, 34" capacity. Practically un-used, single belt drive.

FOR SALE BY

J. Bleser Mfg. & Machy. Co., 16th & Madison St., Springfield, Ill.

Air comp., 6x6 Ing. Rand 67'....\$195.	Miller, No. 3H Le Blond prac.n.#500.
Arch press, 3" stroke..... 195.	Radial drill, 7" Bement..... 395.
Knife Grinder, 79" Hickok..... 175.	Shaper, 16" G E #165., 20" S M 195.
Lathe, 13x6 rebuilt..... 125.	Slotter, 13" Bement..... 295.
Miller, No. 3 Cin. U. eqpt..... 395.	Turret lathe, No. 2W. & Swasey 150.

FOR SALE BY

Fort Wayne Machinery Co., 1515 S. Calhoun, Fort Wayne, Ind.

Drill, 20" Barnes, sl. hd., g. p. f.	Lathe, 24"x8" L. & S. turret; \$125.
Grinder, 10"x36" Norton pl., \$350.	Miller, 36"x10' Ingersoll slab.
Lathe, 14"x8' Sebastian q. c., \$140.	Motors, 1200 1/2 h. p. vertical, 110 v..
Lathe, 14"x6' Champion q. c., t. a.	3 & 5 h. p., 110 or 220/1/60, new.
Lathe, 16"x8' Springfield q. c., t. a.	Shaper, 20" Queen City b. g., vise.

FOR SALE BY

Mid-West Machine Tool & Supply Co., **Davenport, Iowa**

Drill, 4 spindle Avey No. 2MT, p.f.	Lathe, No. 9 LeBlond multi-cut.
Drill, ISS Garvin duplex, 24" cap.	Lathe, 18" Libby H. D., turret.
Grinder, 10"x36" Norton.	Millers, Nos. 9-Y & 2 Brown & S.
Grinder, No. 10 B. & S. ext.	Radial drill, 4" American sensitive.
Hobbers, Nos. 3, 12-B & C.	Turret lathe, Nos. 2 & 6 Warner & S.

FOR SALE BY

Geo. T. Reynolds & Son, Inc., 171 Pine Street, Providence, R. I.

Boring mill, 24" Bullard vertical	Miller, No. 2 B. & S. heavy plain.
Eyelet machine, No. 106 Farrel Foundry.	Miller, No. 4 Thurston die, mtr. dr.
Grinder, No. 2 B. & S. surface.	Presses, No. 10-S Standard; No. 63 &
Grinder, 12" Arter, rotary surface.	No. 65 Bliss, straight side geared.
Lathe, 60"x30" Niles triple geared.	Rolling mills, 3x5, 5x8, 6x10, 12x20.
Miller, No. 2 B. & S. universal.	Shapers, 18" & 24" Stockbridge.

USED AND REBUILT MACHINERY

FOR SALE BY

Brownell Machinery Co.,

Lathe, 60"x30' Pond heavy.
Lathe, 27"x27" Schumacher & Boye.
Miller, No. 4 Cincinnati h. p. vert.
Miller, No. 2-M Potter & J. auto.
Millers, No. 1 Brown & S. plain.

150 Pine St., Providence, R. I.

Planer, 24"x24"x6' Whitcomb.
Press, No. 26 Bliss 800-ton emboss.
Press, No. 5-A Mystic rod emboss.
Screw machine, No. 6 Brown & Sharpe hand.

FOR SALE BY

Marr-Galbreath Machinery Co.,

55 Water St., Pittsburgh, Pa.

Quality Not Reflected in These Low Prices.

Air comp., 12"x10" Chgo., a. c. mtr.
Bender & straightner, No. 4 H. & J.
Boring mill, No. 9 G. & L., 3 1/2" bar.
Boring mill, 30" Colburn, tr. hd.
Boring mill, 36"-44" N-B-P., sh.m.d.
Brake, steel, Chgo. 8"x14 ga. b. d.
Brake Keene toggle, 10"x20 ga.
Die sinker, No. 3 P. & W., r. t.
Drill, 26" Rockford, tap. att.
Drill, 20" Barnes, all geared.
Engine, gas, 55 h. p. West. vert.
Engine, Diesel 166 h. p. DeLaVergne
Engine, Diesel, 120 h. p. vert. 4-cyl.
Folder, 36" Niagara, open throat.
Furnace, gas tempering, 10x10", pot.
Gear cutter, 18" Newark.
Gear cutter, (Pinion) 1x1" S. & C.
Generator, 125 k. v. a. 3/60/220/900.
Generator, 50 k. v. a. 3/60/220/1200.
Grinder univ. t. & c. No. 2 Grn'fd
Hack saws, No. 5 Marvel, auto. fd. (2)
Hack saw, 6x6" Milford, m. d.
Hammer, 30 lb. United, power.
Hammer, 40 lb. Bradley, helve.
Hammer, 125 lb. Beaudry power.
Hammer, 200 lb. Bradley helve.
Hammer, No. 2B & No. 4 B Nasel, motor drive.
Hammer, 1500, 2000, 2500, 4500, s. f. steam.
Hammer, 800 lb. Erie s. f. steam.
Hammer, 1000 lb. Chbg. steam drop.
Header, cold 3" Waterbury-F.
Keysater, 24"x24" Morton.
Lathe, 24"x16" LeBlond. 6" raising blocks, chuck.
Lathe, 18"x8" Rahn-L., q. c. g., t. a.
Lathe, 28"x12" Bridgeford, t. a.
Lathe, 26"x16" Bridgeford g.h., t. a.
Lathe, 26/48"x9" centers, McCabe.
Lathe, 20"x8" Hendey, t. a.
Lathe, 20"x10" Hendey, t. a.
Lathe, 14"x19" Fay automatic.
Magnetic chuck, 14"x40" Heald.
Miller, univ., No. 3 Kemp Smith, V. & I. heads.
Miller, universal No. 1 1/2 Becker.
Miller, plain, No. 2 heavy Ohio.
Miller, No. 4 Ohio, table 101".
Miller, plain No. 2-B Milw. m. d.
Miller, plain No. 3 Cincinnati.

Milling & keyway att., No. 5 So. B.
Pipe machine, 8" Jarecki.
Pipe machine, 6" Oster g. b., m. d.
Planer, 48"x48"x14' openside, m. d.
Press, No. 1 Manly arbor.
Press, Arch, No. 3A Mossberg.
Press, Arch, No. 3A Mossberg dial feed, also roll feed, (2).
Press, D.C. No. 138A Stoll, 3" stroke.
Press, embossing 50-ton Ferracute.
Press, horn, No. 2 Michigan.
Press, horn, 42-h. p. Toledo.
Presses, o. b. i., No. 4 Toledo.
Press, o. b. i., No. 18 Bliss.
Press, No. 19 Bliss o. b. i., for m. d.
Press, o. b. i., No. 21 Bliss.
Press, screw, No. 87 Niagara.
Press, Wheel, 60-ton, 34" W-S.
Punch, SE., 24" tht. 4"x1" m. d.
Punch, SE., 36" tht. 1 1/2"x1" m. d.
Punch & shear, Pels tr. comb., 1"x1".
Punch & shear, No. 82 Beloit.
Punch & shear, s. e., No. 6 L. & A.
Punch & shear, s. e., No. 4 L. & A.
Punch & shear, d. e., cap. 1 1/2"x1".
Rolls, 16"x3" U. S. Forming.
Saw, Cold, Espen-Lucas, 7" rds.
Shaper, 16" Ohio, crank b. d.
Shaper, 20" Cincinnati, motor dr.
Shaper, 20" G. & E., "H-D", m. d.
Shaper, 21" Smith & Mills.
Shaper, 24" G. & E. "H. D." for motor drive.
Shaper, 24" P. & J. "RT", m. d.
Shear, angle, 6x6x1 1/2" H. & J. No. 2, mounted on turntable, for m. d.
Shear, plate, 72"x4" cap. Bertsch, 24" gap, motor drive.
Shear, slitting, No. 24-S Buffalo.
Shear, gap, 42"x1"x18" gap.
Shear, squaring, 10"x16 ga. Ohl.
Slotter, Garvin, die, 12" R. T.
Tapping chucks, 3/16", 1/4" and 2".
Testing mach., 100-ton Olsen, comp.
Turret lathe, No. 3A W. & S., m. d.
Turret, No. 4 W. & S. power feed to turret.
Turret, 2"x24" J. & L., chuck.
Turret, lathe 24" Gisholt, 6 1/2" head, motor drive.
Welder, arc, 200 amp. Lincoln, 3/60.

Partial List. Get Our Complete Stock List.

USED AND REBUILT MACHINERY

FOR SALE BY

West Penn Machinery Company

1208 House Building.

Pittsburgh, Pa.

Air compressors, 30 to 2500 cu. ft.
 Bor. mill, 36"-44" Niles, 2 hds. q. c. g.
 Boring mill, 42" Bullard, 2 heads.
 Boring mill, 48" Gisholt r. p. t., 2 hds.
 Boring mill, 72" Niles, 3 heads, m. d.
 Boring mill, 72" Cin., 2 hds. s. p. d.
 Boring mill, horiz. 64" Niles fl. type.
 Brake, 7' x 10 ga. Chicago, m. d.
 Brake, 10' x 13/16" Chicago, m. d.
 Brake, hand, 10' x 18 ga. Chicago (2).
 Brake, No. 194 Chgo., 8' x 10 ga., b. d.
 Buffer, Valley b. b., dbl. end., 3 h. p.
 Bulldozers, Nos. 2, 4, 6, 9, 28, & 30.
 Cranes, Electric Traveling.
 Crane, crawler, gas, No. 2 Nor'wes.
 Draw bench, 150,000 lb. Stand. m. d.
 Drill, radi. 4' Amer. trip. pur., m. d.
 Drill, radial, 4' Prentice, t. a., b. d.
 Drills, rad. 4', 5' & 6' Cin.-Bick. m. d.
 Drills, radial 4' & 6' Dreses, m. d.
 Drills, upright 10" to 36".
 Filing machine, No. 406 Oliver m. d.
 Flanger, McCabe, 1/2" capacity, dies.
 Flanger & circle shear, No. 407 Nia.
 Forging mch. 1 1/2" Acme, st. fr. b. d.
 Furnace, No. 152 Rockwell rot. hard.
 Gear cutters, 11", 18" & 24" Gleason.
 Gear cutter, spur, D.-S. cap. 2 1/2" x 3 1/2".
 Gear cutter, spur, 36" x 10" Newark.
 Gear tester, Bevel, 90" Gleason.
 Grinder, crank, No. 4A Landis spec.
 Grinder, die, No. 101 Bridg., m. d.
 Grinder, disc, No. 8-20" Besly, b. d.
 Grinders, 8" Black & D., d. e., m. d.
 Grinder, knife, 216" Bridge., 26" wheel.
 Grinder, knife, 60" Bridgeport, m. d.
 Grinder, rad., 14" M. & D., m. d.
 Grinder, surf., Walker 26" x 9", mag. ck.
 Grinder, surf. 42" Spring., tbl. 18 x 84".
 Grinder, surface, No. 16 Blanchard.
 Grinder, surf. Diamond, table 48" x 16".
 Grinder, tool & cut., No. 2 Walker.
 Grinder, Univ. No. 2 Brown & S.
 Hammer, Blacker, power, 35-lbs.
 Hammers, Nos. 2-B, 3-B, 4-B. Naxel.
 Hammers, steam, 600 lb. to 6000 lbs.
 Hammers, stm. dr. 1500 to 10000 lb.
 Header, No. 2 Wat. Far., o. d., tr. st.
 Jig borer, Swiss m. d., No. 5.
 Lathes, 14" x 5' 6" Mulliner, q. c. g., b. d.
 Lathe, 16" x 6" LeBlond, q. c. g., d. b. g.
 Lathe, 24" x 12" American, q. c. g., b. d.
 Lathe, 24" x 16" Bridgeford, g. hd. m. d.
 Lathe, turret, No. 6 Warner & S.
 Lathe, turret, 18" Libby, m. d.
 Lathe, turret, 24" Steinnie, 6 1/2" hole.
 Lathe, turret, 34" Gisholt, b. d.
 Lathes, tur. No. 3 A W. & S. (2).
 Lysholm tables, 72" x 30".
 Miller, pl., No. 34 Ohio, tbl. 13 1/2 x 60".
 Miller, pl., Nos. 3 & 5 Cinc., s. p. d.
 Miller, pl., No. 5 B hyv. B. & S., s. p. d.
 Miller, vert. No. 2 Cin., 11" x 48" s. p. d.

Miller, universal, No. 3 LeBlond.
 Miller, univ. Cin. tbl. 56" x 13 1/2" m. d.
 Motors, a. c. & d. c.
 Nut mche., Wat-Far. 3" cold. b. d.
 Pickler, 4 arm Mesta, 10" radius.
 Pipe machine, 2" Landis, belt drive.
 Pipe mches., 4", 6" & 8" Oster.
 Pipe mch., No. 5 1/2" Williams, m. d.
 Planer, 30" x 30" x 10" Woodward & P.
 Planer, o. s., 48" x 48" x 16" D. & H. m. d.
 Pl., 56" x 48" x 12" Det. & H. rev. m. d.
 Press, cam, No. 69 N Bliss, dbl. act. inc.
 Press, o. b. i. C-4 Ferra., 3500 lb. m. d.
 Press, o. b. i. Bliss, Nos. 18, 19, 20.
 Press, No. 55 Tol. s. s. 2" st. bed. 20 x 19.
 Press, No. 57-S Tol. 6" st. bed. 32 x 32.
 Presses, Nos. 57, 57 1/2, 58 1/2 Toledo grd.
 Presses, trimming, United, m. d.
 Press, No. 64 Cons. 17" x 17", str. 4 1/2".
 Press, No. 59 Toledo, 8" str., m. d.
 Presses, hyd. 100 & 200-ton Oilgear.
 Press, hyd., 400-ton Robertson, m. d.
 Press, No. 96-A Toledo, d. c. 5" str.
 Press, No. 6 Bliss dbl. crank, 6" str.
 Press, screw, No. 87 Niagara.
 Press, wheel, 200-ton Elmes.
 Punch, hand, Shatz, bar and ang.
 Punch & s., No. 1-L & A. 3" thru 1 1/2".
 Punch, EF Cleveland, 36" thr., 1 1/2"-1"
 Punch, mult., No. 6 H. & J. 10".
 Riveters, air, hammer, spinning.
 Riveter, No. 120 Grant, cap. 1/2", m. d.
 Rolls, bending, 12" x 1/2" H. H., b. d.
 Roller, thread, Nos. 10, 30, 40 W.-F.
 Saw, cold, No. 6 Coch.-Bly, s. p. d.
 Saw, cold, 48" Newton, m. d.
 Saws, friction, Nos. 2 3 & 4 Ryerson.
 Saw, hack, No. 4 Robertson, 8" x 8".
 Scale, sheet bundling, 2500 lbs.
 Screw mchs. Nos. 52, 53, 56 Nat. A.
 Shaper, vert., Jones 10" stroke, m. d.
 Shapers, 16", 30", 24" & 36" G. & E.
 Shaper, 24" Flather, b. g., m. d.
 Shears, alligator, 1 1/2", 2", 3" & 4".
 Shear, Allig. No. 6 Mesta. 6" sq. m. d.
 Shear, angle, 6" x 6" x 1" H. & J.
 Shear, bevel, Lennox 1/2", b. d.
 Shears, foot, 30" and 36" Pexto.
 Shear, sq. No. 196-F Nia. 8' x 18 ga.
 Shear, guil. No. 5 H. & J. 4" sq., m. d.
 Shear, rot., 30" Quick, cap. 3-16" b. d.
 Shear, square 8' x 14 ga., Ohl. b. d.
 Shear, sq., 132" x 16 ga. Canton, h. d.
 Sheet oiler, Rolls 30" x 1", m. d.
 Sloters, 6" Newton, 8" & 21" Betts.
 Straightener, 1", 1 1/2", 4" rd. Abramson.
 Straitner, No. 2 K. & R., 7-r., cap. 1 1/2".
 Tapping machine, vertical 4" Baker.
 Testing mch., Brinnell hard., type A.
 Upsetters, 1" to 6".
 Welder, butt, Tay.-Winf., 1/2" cap.
 Welder, spot, 13 KVA Taylor-W. 10".
 Welder, spot, 40 k. w. T.-G., 2 pcs. 1/2".

USED AND REBUILT MACHINERY

FOR SALE BY

Segal Machinery Co., • • • **810 W. Lake St., Chicago, Ill.**

Air compressors, all sizes. Drill, 5' Dresser, s.p.d., gr. box. \$350. Drill, 24' Fostick, s.p.d., gear box. Grinder, No. 60 Heald internal, cyl. Screw machine, No. 4 Warner & Swasey, geared friction head. 16x14 and 10x14 Ingersoll-Rand compressors, 600 cu. ft. with unloaders \$425.	Lathe, 16x6 L. & S. q. c. g., t. a. Lathe, 24x10 Hamilton, fully equip. Miller, No. 4 Fox univ., s.p. d. Shaper, 24' Milwaukee, b.g., sw. v. 16x14 and 10x14 Ingersoll-Rand compressors, 600 cu. ft. with unloaders \$425.
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FOR SALE BY

Herben Machinery Equipment Co., 28-30 S. Clinton St., Chicago, Ill.

Air compressor, Champion 20 cu. ft. Brake, 3', 16 ga. 8' 16 ga. D. & K. Ironworker, No. 10 Pels, 4x4x8' ang. Lathes, 20x10 R. & L. q. c. g., 20x12 Hendey q. c. g. t. a., Sidney 20x8, Lodge & Shipley 14' x8' q. c. g., South Bend 9' x3'. Millers, No. 2 LeBlond, No. 3 Kemp, universal No. 3 Brown & Sharpe, No. 5B Becker vertical.	Saw, No. 8 Marvel 16"x18". Presses, all sizes, No. 2 Ferracute o. b. i. \$115. Shears, power, 36" 16 ga.; foot power, 30", 36", 62", 96". Screw mchs., auto.; 60 B. & S., No. 52 Acme 5 spindle Davenport; Hand; Nos. 0, 2 & 3 Foster, 1000 parts and collets.
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FOR SALE BY

Midwest Equipment Co., • • • **625-30 W. Lake St., Chicago, Ill.**

Air compressor, 9x8, I. R. compl. Air compressor 19x12x16, I. R. compl. Grinder, universal, B. & S., No. 2. Grinder, No. 2 B. & S. surface. Grinder, No. 6 Gardner, b.b., 26" discs. Grinder, Cinc. No. 1 tool & cutter. Lathe, 17x8 Sidney, l.c.g., complete. Lathes, "Cataract", 1 and 1 1/2" cap. Lathe, 14x6 Sidney, quick ch. gear. Lathe, 34x10 Wolcott, q. c. g., comp. Miller, No. 3 B. & S., plain. Miller, No. 1 Kemp Smith pl., comp. Miller, Kemp Smith No. 3, vert. att. Planers, Lathes, Screw Machines, Air Compressors, Woodworking Machines.	Miller, No. 2 Becker, vertical. Punch press, No. 4 Walsh, o. b. i. Punch press, No. 3 Robinson, o. b. i. Radial drill, 3' Cincinnati Bickford. Screw machines, No. 2 B. & S. auto- matic with slotting attachment. Screw machines No. 60 and No. 0 Brown & Sharpe, automatic. Screw machines, No. 4 Warner & S. Screw mchs., Nos. 4 & 3 Foster, w. f. Shapers, 14", 16", 20" and 24". Shear, Quickwork, pwr. dri. 14 ga. cap. Welder, arc. 300 amp. Wilson, m. d.
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FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1211-1223 Hadley Street,

St. Louis, Mo.

Air compressor, 12"x10' Chgo., belted Bar shear, 8"x4". Bolt threaders, 1" and 1 1/2" Landis. Boring mills, 36", 42", 60" & 72". Bulldozers, No. 3 and No. 4. Drill, 1-spindle Avey. Drill, 6' arm American radial. Grinder, 12"x60" Landis universal. Grinder, 12"x36" Thompson univ. Grinder, 24"x96" Landis cylinder. Grinder, No. 60 Heald cylinder. Hammer, No. 3B Nazel. Lathe, 16"x7' P. & W., geared head. Lathe, 16"x9' Lehman. Lathe, 24"x12' Schumacher & Boye. Lathe, 30"x15' American, q. c. g.	Lathe, 16"x12' South Bend. Miller, No. 2 Cincinnati, plain. Miller, Ingersoll slab, 27"x23"x14' bed, 4 heads, motor drive. Pipe machines, 4", 8", 12" & 16". Planer, 60"x48"x10' Gray. Press, No. 24 Toledo cam drawing. Press, No. 59 Niagara grd. tie rod. Press, No. 723 Toledo cam drawing. Punch, No. 14 W. W., 12" throat. Punch, two 20" throats, cap. 1" in 1". Sand slinger, Beardsley & Piper. Shapers, 16" & 26" Smith & Mills. Shear, circle, No. 310 Niag. 48" thr. Turret lathe, No. 3A W. & S. 8" hole, motor drive; No. 2A W. S.
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USED AND REBUILT MACHINERY

FOR SALE BY

Brown Machinery Co.,

Brake, 8' 16 ga. Whitney-Jen., new.
 Broach, No. 1 LaPointe, sgl. spdl.
 Drills: 24", 26" and 32"; No. 66-D
 Moline 4-spindle Hole Hog.
 Drill, Allen B., single spindle, m. d.
 Drill, Demco b. b., m. d.
 Grinders: No. 6 Bealy dbl. spindle;
 No. 220 Badger auto. disc; 12x30"
 Modern, plain, s. c. s.; 8" Heald;
 P. & W. 36" vertical surface.
 Groover, power, 6' horn.
 Lathes, 30" Blaisdell, 28" Harrington
 gap. ext. bed; 26" Putnam, taper
 att., 18" & 16" Lodge & Shipley;
 16" & 14" Monarch; 7'x6' Lo-swing;
 No. 4 Wood Tilted Turret.
 Millers: No. 2 Hendey-Norton, univ.;
 slab, 36"x10' Ingersoll; No. 3

2333 N. 9th St., St. Louis, Mo.

Fox; No. 4 Hendey Lincoln;
 American No. 1 plain.
 Planer, 42x42x10 Pond.
 Planer, 24"x24"x6' S. & S.
 Press, No. 7 Zeh & Hahneman,
 Nos. 1, 3, 4 Lashbough-Jordan.
 Punch, Cleveland C. in 4"; Rock
 River Style L in 4".
 Punch & shear, No. 9C Beloit, in 8".
 Punch & shear, L. & A. 4" cap.
 Riveter, No. 5A High Speed, 4".
 Shaper, 24" Ohio; 20" Queen City.
 Shaper, 20" Columbia.
 Shear, 62" underdriven, cap. 10 ga.
 Shear, 4" Lennox bevel.
 Threaders: 4" Geometric; National
 1 1/2" double head.
 Welder, 20 k. w. Agnew.

FOR SALE BY

Scott-Bansbach Machinery Co.,

4607 West 20th St., Chicago, Ill.

Air compressor, Daco No. 605P complete, motor and tank.....\$ 85.
 Air compressor, Curtis Model A, 4 1/2x4 1/2, 8 to 16 cu. ft.,..... 80.
 Air compressor 6"x6" Curtis water cooled, cap. 15 to 49 cu. ft..... 100.
 Automatic screw machines, B. & S., No. 00, 0, 2 and 2G.....\$150. to 475.
 Automatic screw machine, Gridley 4 spdl. "F" 4", 1 1/2", 1 1/4" and 2 1/2" \$150 to 750.
 Automatic screw machines, Gridley 4 sp., Model G, 9/16" & 7/8".....200 & 500.
 Bolt cutter, 1" Landis, belt drive..... 125.
 Dieing press, 50 ton, H. & W. complete, Ser. No. 484..... 1,000.
 Drill, New Albany, h. s., motor drive, 110-60-1..... 100.
 Drill, Avey, h. s., b. b., 14" swing, No. 2 M. T. 100.
 Drill, Leland Gifford, h. s., b. b., 14" swing, No. 2 M. T. 125.
 Drill, 2 spindle H. & W. h. s., b. b., 16" swing, heavy duty, class B.... 150.
 Drill, 3 spindle Avey, h. s., b. b. 3" capacity, belt drive..... 200.
 Drill, 3 spindle, Leland-Gifford 14" swing, h. s., b. b., No. 2 M. T. 350.
 Drill, 3 spdl., Leland-G., 20" swing, hs., b. b., 12" travel, 26"x54" table 500.
 Drill, 20" Canedy-Otto with back gears and power feed..... 85.
 Drill, 24" Sibley sliding head, b. g. and p. f..... 125.
 Drill, radial, C. O., No. 50, wall post type, 2 1/2 foot arm, hand feed..... 125.
 Gear cutter, B. & S. No. 3, 26" for spur gears..... 200.
 Gear hobber, No. 00 Pfauter, cap. 8"x8"x10 DP..... 150.
 Grinder, Gardner No. 4 disc, 23" dia. with press and tables, ball brg... 200.
 Grinder, Ransom disc, 26" diameter with press and tables..... 150.
 Grinder, Heald 8" rotary surface, magnetic chuck, power feed..... 75.
 Hammer, No. 1 1/2 B. High Speed belt drive, 1/2" capacity..... 60.
 Hammer, No. 3A High Speed belt drive, heavy duty, 5/16" cap..... 150.
 Hammer, No. 3 A, H. D., motor dr. with motor, 220, 60, 3. 5/16" cap. 200.
 Hammer, No. 4 A, High Speed belt drive, 1/2" cap..... 200.
 Hammer, No. 5A High Speed, motor shelf, 1/2" capacity..... 275.
 Hammer, 300 lb. board drop..... 250.
 Lathe, spinning, Bliss, 24" swing belted motor drive, 220, 60, 3..... 300.
 Lathe, 13"x6' Hendey, quick change, with 2 chucks, 150.
 Lathe, 14"x6' American quick change..... 225.
 Lathe, 15"x6' South Bend, semi quick change with chuck..... 175.
 Lathe, 18"x6' Canada, q. c. d. b. g., 2 chucks..... 200.
 Lathe, 16"x6' American, quick change, pan bed and chuck..... 400.
 Lathe, 16"x8 Hendey, q. c., taper attachment and chuck..... 450.
 Lathe, 18"x8 Davis, d. b. g., q. c., heavy duty..... 450.
 Lathe, 20"x8 Sebastian Gold Seal q. c., d. b. g. with chuck..... 450.
 Lathe, 30"x13' H. S. & G. heavy duty, q. c., d. b. g. 16,000 lbs..... 600.
 Lathe, sliding gap, 28-48"x12' Harrington, plain change..... 400.

USED AND REBUILT MACHINERY

FOR SALE BY

Wm. W. Meyer Blower Co.

1045 W. Washington Blvd.,

Chicago, Ill.

BLOWERS—FANS—EXHAUSTERS.

Connersville—Roots—positive pressure blowers.

Centrifugal and Turbo blowers.

Ventilating Fans and Exhausters.

New—Rebuilt—Used.

FOR SALE BY

H. F. Wolnick Machinery Sales

Phone Lawndale 1777

21st & Marshall Blvd., Chicago

Boring mill, 10x12 Niles, floor type.

Drill press, 22" Barnes, grd. head.

Grinder, 48" knife and tool.

Grinders, tool plain, univ., ext., int.

Lathes, 12"x32" swing x30" long.

Mill, No. 5 Ingersoll vertical.

Milling machines, plain & universal.

Planers, 8'x8'x20", 4 heads, m. d.

Presses, Nos. 1 to 6.

Press, No. 78 Toledo geared, m. d.

FOR SALE BY

Columbia Machinery Co.,

130 E. Columbia St., Fort Wayne, Ind.

Auomatics, No. 2, 2G B & S 1" cone.

Air comp., 9x9, 6x6 Curtiss twins.

Bolt threader, Landis 1 1/2" m. d.

Brakes, 3-4-8-10" hand.

Die sinker, No. 2 P. W.

Furnaces, gas and oiled fired.

Grinders, 10x36 Landis, 6x32 Norton

Lathes, No. 4 & 2A Warner & S.

Lathes, 16x8, 16x6 Sidney grd. hd.

Lathes, 13x5, 15x8 South Bend.

Miller, No. 1 1/2 B. & S. univ. m. d.

Miller, No. 2 Cinc. h. p. pl., s. p. d.

Miller, Nos. 2 & 3 Ryerson pl. s.p.d.

Motor, a. c., 200 h. p. slip ring, 100

and 50 h. p. Induction.

Presses, 15 & 30 ton Lucas; C5 Fer.

FOR SALE BY

The W. M. Pattison Supply Co., 777 Rockwell Ave., Cleveland, O.

Drill, No. 2 Baush 16"x30" head, multiple, fitted 12 spindles, No. 2 Morse p. f. to head, 20"x30" table, m. d. with 10 h. p. a. c. motor.

Lathe, 16"x8' Hendey cone head, comp. rest, taper attachment, 12" 4-jaw chuck, all equipment and C-S rebuilt.

Lathe, 16"x8' Hendey cone head comp. rest, taper attachment, 12" 4-jaw chuck, all equipment and CS rebuilt.

Lathe, 16"x10' LeBlond 4-step cone s. b. g., q. c. g., comp. rest, all equipment and CS—rebuilt.

Planer, 30"x30"x10' Gray spur geared, 1 head on CR and CS—rebuilt.

Write for complete list of bargains in discontinued lines.

FOR SALE BY

Hess-Schenck Company,

3951 St. Clair Ave., Cleveland, Ohio

Boring mill, No. 1 2 1/2" bar, Cleveland, horizontal motor drive.

Boring mill, 6 1/2" bar Niles horizontal floor type.

Gear shaper, No. 6 Fellows, with lot of arbors and cutters.

Lathe, 36"x18' Pond triple geared.

Miller, No. 5-C Becker vertical, single pulley drive.

Nibbler, No. 1 Campbell, motor drive.

Shaper, 21" Smith & Mills back geared crank.

Slotter, 10" Newton.

Turret lathe, 28" Gisholt.

Turret lathe, No. 1-B 2" cap. Foster universal.

Wire drawing, No. 1 Cone Waterbury, ten die.

USED AND REBUILT MACHINERY

FOR SALE BY

Midland Steel & Equipment Co.

Lathe, 16"x8" Advance, q. c. g.
Miller, No. 6 Becker vertical.
Press, No. 63 Consolidated.
Press, No. 73 Consolidated.
Press, No. 2 Pratt & Whitney.

400 S. Clinton St., Chicago, Ill.

Radial drill, 3' Western.
Shaper, 24" Rockford.
Sheet leveler, 36" Poole, 16 ga.
Stromberg Electric Time System,
with 12-job recording clocks.

FOR SALE BY

The Elyria Belting & Machinery Co.,

Corner Williams and Buckeye Streets,

Elyria, Ohio

Boring mill, 42" Bullard, vertical, arranged motor drive.
Bulldozer, No. 5 Williams & White, 20" stroke.
Drill, No. 25 Foote-Burt, high duty.
Hammer, 75 lb. Beaudry, Champion power.
Motor, 25 h. p., 440 volt, Fynn Weichsel.
Scrap hydraulic baler & pump, 13-P Logemann, 150 lb. capacity.

FOR SALE BY

Ott Machinery Sales Co.,

2539 Woodward Ave., Detroit, Mich.

Boring mill, No. 32 G. & L. horiz.
Bor. mill, No. H B-3-5" sp. Niles hor.
Grinder, No. 10 B. & S. pl., s. p. d.
Groover, oil, No. 1 Fischer, a. m. d.
Lathe, 16"x6" Prentice, g. h., s. p. d.
Mill, No. 6 Lees-Bradner thread.

Milling mche., No. 3 B. & S. vert.
Milling mch., No. 4 Knight vert.
Nut blanking mch., 4" Waterbury-F.
Planer, 60"x60"x20" Gray, 4 heads.
Press, No. 201-A Toledo dbl. col.
Turret lathe, 34"x36" Acme grd. hd.

Your Inquiries for any Metal Working Machinery Solicited.

FOR SALE BY

Wigglesworth Machinery Company

199 Bent Street,

Cambridge, Mass.

Boring mill, 24" Bullard, New Era.
Drill, 5" American universal.
Gear hobber, Mikron.
Grinder, 18x36" Norton plain.
Grinder, 30"x168" Landis plain.
Lathe, 12"x6" Hendey geared head.
Lathe, 30"x15" Niles-Hement-Pond.
Miller, No. 2-B Brown & Sharpe.

Miller, 3B heavy Brown & Sharpe.
Shear, combination, Schatz.
Shear, No. 636 Niagara power, gap.
Spot welders, 17 & 25 k.v.a. Thompson
Turret lathe, No. 2A Warner & S.
Turret lathe, No. 3A Warner & S.
Timken bearing, coverd ways, m.d.

Send for Complete Stock List.

FOR SALE BY

Geo. M. Bernstein & Co.,

14 S. Clinton St., Chicago, Ill.

No. 24B Milwaukee vertical miller, s. p. d., 17" rotary table, 90° new.
Boring mill, 24" Cleveland hor. bar.
Die cast, Victor, jr. hand operated.
Die filer, Nos. 5 & 6 Rearwin. m. d.
Drill, No. 2 Avey, two spdl. dbl. br.
Drill, 24" Barnes camel bk. tap. att.
Drill, 26" Barnes sidg. hd., b.g., tap.
Engraving mch., No. 1-D Gorton.
Grinder, Nos. 2, 3 W. & M. sur., cks.
Grinder, No. 2 American sur., ck.
Grinder, No. 13 B. & S. universal.
Lathe, 15"x8" C. & J. q.c.g. ck. & eq.
Lathe, 15"x8" G. & K., pcg. equip.

Lathe, No. 4 Milliholland turret.
Miller, No. 1 Brown & Sharpe plain.
Miller, No. 1 Kempamith universal.
Miller, No. 14A Rockford plain.
Miller, No. 2A B. & S. univ., s.p.d.
Miller, No. 2A B. & S. plain, s.p.d.
Screw mche., No. 2G B. & S. auto.
Screw press, 40 ton Jarecki.
Shaper, 13" Smith & Mills, crank.
Shaper, 18" Barker & Chard, crank.
Shaper, 17" Averbeck, b. g. crank.
Shaper, 21" American, b. g., crank.

USED AND REBUILT MACHINERY

FOR SALE BY

The E. L. Esley Machinery Co.

Telephone Lincoln 6320 . . . 831 Rees St., Chicago

Boring mill, 41" Colburn, 2 heads.
Drill, radial, 5' Cincinnati-Bickford.
Lathe, 18"x8' Monarch, motor in leg.
Lathe, 16"x8' American, motor in leg.
Miller, No. 13-B, B. & S., mtr. dr.
Miller, No. 2 BS, K. & T., pl. dbl. o.a.

Planer, 30"x30"x8' Cleveland, O. S.
Planer, 32"x48"x12' Cleveland, 3 hds.
Saw, 8"x9' Peerless shaping.
Shear, 8' 10 ga. Niagara.
Turret lathe, 4A B. & S., univ., m. d.
Wheel press, N. B. P., 400 ton.

FOR SALE BY

John A. Stockman. Honesdale, Pa.

Boring mill, 100" N. B. P., motor drive.
Drill, 24" Barnes, single pulley drive.
Drill, radial, 6' Cincinnati-Bickford.
Lathe, 24"x24" L. & S. geared head, motor dr., d. c. motor, q. c. g., taper att.
Lathe, turret, No. 3-A Warner & Swasey.
Pipe machine, 8" Crane Co., motor drive, lot of dies.
Planer, Smith & Silk, 24"x24"x6'.
Shaper, 16" Barnes, back geared.
Sheet metal cutter, Gray No. 2, 36" throat.

FOR SALE BY

The O'Brien Machinery Co., 113 N. Third St., Philadelphia, Pa.

Bending roll, 16" H. & J. 1/2" cap.
Boring mill, 72" Bullard vert. 2 hds.
Boring mill, 3" universal horizontal.
Column gage, 14" Espen-Lucas.
Drill, 3 spd. Edlund b. b. sensitive, power feed.
Grinder, 10"x52" Landis, self contained, plain.
Hammer, 800 lb. Erie, steam forging.
Hammer, 1100 lb. N.B.P. steam forg.
Hammer, 2000 lb. Chambersburg double frame, steam.
Keyseater, No. 2 Baker, 2" cap., belt drive.

Lathe, 27"x12' L. & S. geared head.
Lathe, 42"x28" Fay & Scott b. dr.
Miller, No. 14 Owens univ., belt drive, table 32"x7".
Pipe machines, 2, 4, 6, 8 and 12" belt and motor drive.
Punch, beam, type 1G Clev., 24" bms.
Punch, No. 3 Southwark 4x4", mtr.
Shapers, 14, 16, 20 & 24" various makes
Shear, No. 5 H. & J. s. e., 24" blades.
Slotter, 12" Dill, belt drive, all power feeds.
Surface plate, 36"x66" Brown & S., scraped, new.

FOR SALE BY

McDonald Machinery Co., 1535 N. Broadway, St. Louis, Mo.

Bolt mchs., Landis & Acme 14".
Boring mill, Lucas No. 21 horizontal.
Boring mills, Barrett 5" bar horiz.
Brake, D. & K. 8' 10 ga., pwr. leaf.
Drills, Cin-Bickford 3' & 3 1/2' radials.
Gear, cutter, G. & E. 60" m. d.
Gear hobber, G. & E. 24".
Grinders, B. & S. No. 2 surf. & univ.
Grinder, P. & W. 14" vert. surf.
Ironworkers, Buffalo No. 0 univ.
Keyseaters, M. & M. No. 2.
Lathes, F. & M. 60"x26' bed; LeBlond 21"x18", q. c. g.; 30 others in stock.
Milling machines, B. & S. No. 5, vert.
Milling mchs., B. & S. No. 14 Cinc.
No. 14, Hendey No. 1-B, Kemp.
No. 3; Ohio No. 29; vertical slott.

attch., all universal; Kemp. No. 1, LeBlond No. 3-H; Brown & S. No. 3-B, s. p. d.; Brown & Sharpe No. 3, all plain, Cincinnati 12" Mig.; Milw. No. 3-B & No. 1-A s. p. d. plain; K. & T. No. 3-B plain, s. p. d.
Punch press, d. c. grd., 70" between uprights, 5" str., wt. 35,000 lbs. Niag. No. 5, McD. No. 7 o. b. i., grd.
Shapers, G. & E. S. & M., Cin., Ohio, American, Steptoe, Queen City, 12", 16", 18", 20", 24" and 28".
Square shears, Bertsch 10' 16-ga.
Turret lathes, W. & S. No. 2A univ.
Turret lathes, Libby 18" geared head universal, Gisholt univ.

USED AND REBUILT MACHINERY

FOR SALE BY

United Machinery & Supply Co., 1241 Walton Ave., St. Louis, Mo.

Brake, box & pan, 4' D. & K.
Hack saw, 6x6 Peerless.
Hammer, 25 lb. Little Giant, belt dr.
Lathe, 11"x5' Sheppard.
Nailing mche., 9 tube Morgan, m.d.

Plate planer, 16' Niles.
Punch press, No. 73 Swaine, b. g.
Rollover jolt machine, Osborn.
Shear, 7'x3" capacity.
Shear, throatless, Lennox, 3/16, m.d.

FOR SALE BY

Davis Machinery Co., St. Clair & Washington Sts., Toledo, Ohio

Drill, 3' Bickford radial, s. p. d., t. a.
Drill, Avey h. s., b. b., 10' overhang.
Drill, 24" Cincinnati, b. g., p. f.
Grinder, No. 14 Pratt & W. vert. sur.
Hammer, 2A High Speed riveting.
Hammer, 4A High Speed riveting.
Lathe, 14"x6' Hendey q. c. g., tie-bar
Lathe, 20"x22"x10' Amer., q. c. g., h. d.
Mill, 2-M Potter & J. horiz. auto.
Mill, No. 4 Cincinnati univ. c. p.
Mill, No. 3 Kempsmith univ., c. p.

Oil groover, No. 1 Fischer.
Press, No. 4 R. & K., o. b. i.
Press, No. 21 Bliss-Consol. horning.
Screw machine, No. 1 Foster hand.
Screw mche., No. 6 Warner & S.
Shaper, 16" Whipp crank.
Shaper, 16" Cincinnati crank, b. g.
Shapers, 20"x24" Steptoe crank, b. g.
Shears, 15A Niagara circle, 16 ga.
Tappers, No. 2 & 2X Garvin, vert.
Turret lathe, No. 7 Foster, pwr. fds.

All With Money Back Guarantee—Many More Items in Stock.

FOR SALE BY

Reliance Machinery Sales Company

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Pittsburgh, Pa.

Bulldozer, No. 9 Williams-White.
Drill, 6 spdl. Barnes, No. 2 m. t.
Drill, 4 spdl. Colburn No. 4.
Drill, radial, 33" Mueller, s. p. d.
Hoist, elec. 3 ton Shepard, a. c.
Lathe, 18"x8' L. & S. pat. hd., 230 v.
Lathe, 48"x20' Betts-B., a. c., m. d.
Miller, No. 2AS Milwaukee, double
over arm, single pulley.
Miller, 30"x10' Newton planer type,
adjustable rail.

Miller, No. 24 Rockford, cone.
Miller, vert., No. 5-C Becker.
Presses, Nos. 33 & 4 Toledo, o. b. i.
Press, Perkins dbl cr., 24" bet. hsg.
Punch, L&A 1" thru 1", 24" tht.
Shears, alligator, 1 1/2 to 4" sq. cap.
Shear, 11"x18 ga. Canton.
Shear, Marshalltown throatless, 3/4".
Shaper, 24" Cincinnati, cone.
Shaper, 24" G. & E. hi duty, s. p. d.
Turret lathe, 24" Gisholt, 6 1/4" h. s.

FOR SALE BY

The Jones Machine Tool Co.,

Front & Pike Sts., Cincinnati, Ohio

Baler, scrap, Logeman.
Bolt cutter, 1 1/2" Landis, dbl. spdl.
Drill, No. 14 Colburn heavy duty.
Gear cutter, No. 13 B. & S. bevel & sp.
Gear hobber, No. 12 Barber-Colman.
Grinder, No. 1 Diamond surf. 12x24"
Grinders, disc. various sizes.
Hack saws, 6x6.
Keyseater, No. 1 Baker.
Lathe, 27"x16" American grd. head.
Lathe, 36"x18" Lodge & Shipley.
Lathes, shapers & planers, all sizes.
Milling machine, No. 4 Cinti. plain.
Milling mche., No. 3 LeBlond univ.
Radial drill, 5" Am. s. p. d., enc. hd.

Rail drill, 10' Andrews 16-sp., 3/4" cap.
Square shear, 54"x4" Huntington.
Square shear, 60" Bertsch, 10 gauge.
Square shear, 10'-3/16" cap.
Shears, No. 542 Niagara, 16 ga.: 60"
Yoder, rot., 16 ga.: 18" Southwark
rot., 7 ga.: 37" Tol. 16 ga. 15" gap.
Upsetters, 2" Ajax, belt drive.

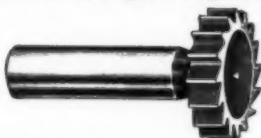
PRESSES

No. 25 Niagara arch press.
No. 91B Toledo 32" dbl. crank grd.
No. 164 Consolidated 36" dbl. cr. grd.
No. 43 Robinson 46" dbl. crank, grd.
No. 77 Toledo, b. g. gap press.
50 inc. presses—various sizes.

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2500 New High Speed Steel



Woodruff Keyseat Cutters \$1.00 EACH

Cutter No.	List Price, Each High Speed Steel	Diameter of Cutter, Inches	Thickness, Inches	Whole Length, Inches	Diameter of Shank, Inches
1	\$2.80	1/2	1/16	2 1/16	1/2
2	2.80	1/2	3/32	2 3/32	1/2
3	2.80	1/2	1/8	2 1/8	1/2
4	2.80	5/8	3/32	2 3/32	1/2
5	2.80	5/8	1/8	2 1/8	1/2
6	2.80	5/8	5/32	2 5/32	1/2
7	3.10	3/4	1/8	2 1/8	1/2
8	3.10	3/4	5/32	2 5/32	1/2
9	3.10	3/4	3/16	2 3/16	1/2
10	3.40	7/8	5/32	2 5/32	1/2
11	3.40	7/8	3/16	2 3/16	1/2
12	3.40	7/8	7/32	2 7/32	1/2
A	3.40	1	1/4	2 1/4	1/2
13	3.80	1	3/8	2 3/8	1/2
14	3.80	1	7/32	2 7/32	1/2
15	3.80	1	1/4	2 1/4	1/2
B	4.00	1 1/8	5/16	2 5/16	1/2
16	4.20	1 1/8	3/16	2 3/16	1/2
17	4.20	1 1/8	7/32	2 7/32	1/2
18	4.20	1 1/8	1/4	2 1/4	1/2
C	4.40	1 1/4	5/8	2 5/8	1/2
19	4.60	1 1/4	3/16	2 3/16	1/2
20	4.60	1 1/4	7/32	2 7/32	1/2
21	4.60	1 1/4	1/4	2 1/4	1/2
D	4.90	1 1/4	3/8	2 3/8	1/2
E	4.90	1 1/4	7/8	2 7/8	1/2
22	5.00	1 3/8	1/4	2 1/4	1/2
23	5.40	1 3/8	5/8	2 5/8	1/2
F	5.40	1 3/8	3/4	2 3/4	1/2
24	5.50	1 1/2	1/4	2 1/4	1/2
25	5.90	1 1/2	5/8	2 5/8	1/2
G	5.90	1 1/2	3/4	2 3/4	1/2

PRICE: \$1.00 Each For Any of Above

Victor Machinery Exchange, Inc.
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Production Equipment

Here is a list of generally hard to find tools in good condition. Practically all of the items below were bought in 1930, have seen very little use and are as good as new in every way. Substantial savings and quick delivery can be had.

CHUCKING MACHINES

Baird six spindle.
Cleveland 4½" and 8".
National Acme 4".

DRILL PRESSES

Allen single and four spindle.
Avey single and two spindle.
W. F. & John Barnes No. 920.
Barnes 30".
Barnes 42", (arranged for lapping).
Bradford, Buffalo, Burke, Canedy-Otto
Cincinnati single and 3 spindle.
Edlund Nos. 1B, 2B, 3B, 1, 2, 3 and
4 spindles.
Fondick 1, 2 and 3 spindle.
KINGSBURY; We can meet any
specification on these.
Leland-Gifford 1, 2 and 3 spindle.
Taylor & Fenn, 1, 2, 3 and 4 spindle.

GRINDERS

Arter No. 132, Automatic cylindrical.
Arter No. 16 rotary surface.
Besley No. 6, Disc.
Brown & Sharpe No. 1 Univ., No. 2
Universal, No. 11 Plain.
Bryant No. 3 Chucking, No. 12-A
Chucking.
Cincinnati 8x18 Cylindrical.
Diamond No. 6, Disc.
Diamond, Surface.
Fitchburg Universal, Cylindrical.
Fitchburg, Spline.
Gallmeyer & Livingston No. 4 Surface.
PRATT & WHITNEY 8" Surface
Grinder, Rotary.
PRATT & WHITNEY 14" Vertical
Surface.
Sellers, Tool.
WILMARTH & MORMAN Surf.

HYDRAULIC BROACHING PRESSES

American 25, 50, 75 ton.

LAPPING MACHINES

Ashton-Russell Center Lappers.
Norton No. 1-F.
Barnes 42" Flat Plate Lapper.

LATHES

LeBlond Multi-Cut.

MILLING MACHINES

Pratt & W. 6"x14" Thread Millers.
Pratt & W. 8"x30" Thread Millers.
Standard No. 1 Hand Millers with
vertical spline milling head.

PLATING EQUIPMENT

Hanson-Van Winkle Conveyor Platers
Hanson-Van Winkle Mercil Rotary
Platers.

PROFILERS

Pratt & Whitney No. 12.

SCREW MACHINES

Cleveland ¾", ¾", 4" bar machine.
Cleveland 4½" & 8" chucking machine.
Greenlee 2".
National Acme 4".

SPOT WELDERS

A. E. F. No. LD-12.
A. E. F. No. MD-12.

SLITTERS

Yoder 36" and 42".

TAPPERS

Anderson No. 40.
Boley Multiple Drilling and Tapping.
Globe No. D-17.

Your personal inspection is invited. If you cannot call, send us your requirements and we will gladly quote you in detail.

Frank M. McKey, Trustee, Grigsby-Grunow Co., Inc.
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Guaranteed Machine Tools

Bargains with Safety

No. 3 Cincinnati Vertical Miller, Flanged Spindle, Single Pulley Drive.
 No. 4 Cincinnati Vertical Miller, Flanged Spindle, P.R.T. Single P. Dr.
 No. 2 Brown & Sharpe Vertical Miller, Rotary Table, Side Mill Attach.
 72"x72"x18" D. & H. Openside Planer, 3 Heads, Arranged M. D.
 42"x42"x14" D. & H. Openside Planer, 3 Heads, Arranged M. D.
 72" Colburn Vertical Boring Mill, Self-Contained Motor Drive.
 46"x28" Houston S. & G. Geared Head Lathe, Motor Drive.
 10"x3/4" Cleveland Gate Shear, 48" Throat, Turntable, M. D.

Boring Mills

36" Bullard Vertical Turret.
 42" Bullard Vertical.
 42" Gisholt Vertical, M. D.
 44"-36" Pratt & W. Vert. Tur.
 Detrick & Harvey Floor Boring.
 Lucas Horizontal, 3" bar.
 84" Betts Vertical.
 192" Betts Vertical.

Brakes

8" x 10 Gauge Geo. Ohl, Motor Dr.
 10" x 14 ga. Geo. Ohl.
 10" x 8 ga. Loy & Nawrath.
 10" x 1/4" Loy & Nawrath, M. D.

Drills

3" Cincinnati Bickford Radial.
 4" Niles Universal Radial.
 5" Drees Radial, Motor Drive.
 5" N. B. P. Radial, Semi-Univ.
 6" American Triple Purpose, (2).
 6" Cincinnati Bickford Radial.
 24" Aurora, Sliding Head.
 24" Cincinnati, S. H. Gear Box.
 30" Snyder Sliding Head.
 12 spindle Baush Multiple.
 32 spindle Baush Multiple.
 1 spindle Sipp, High Speed.
 4 spindle Allen, H. S.

Gear Cutters

No. 13 B. & S. Light 18"x4".

Grinders

No. 2 Diamond, Belt.
 No. 14 Besley Double Disc.
 No. 65 Heald, Univ., jig & blower.
 No. 75 Heald Internal, Belt.
 6"x18" Landis Plain, Piston ring.
 16"x48" Landis Crankshaft.
 18"x72" Norton Crankshaft.

Milling Machines

No. 3 Cincinnati, Uni. Cone, (2).
 No. 3 Cincinnati, Plain, M. D. (2).
 No. 2 Garvin Duplex.
 No. 2 Knight Vert. Milling & Drill.
 No. 20 Ohio Universal Cone.

Presses

No. 1 1/2 Bliss Toggle.
 No. 7 Bliss Consolidated, Geared.
 No. 8 Perkins Knuckle-Joint Embossing 250 ton capacity.
 No. 5A Toledo, Flywheel M. D. (2).
 No. 92 1/2 C Toledo G. D. C. tie rod.
 No. 203-D Toledo, Double Crank.
 No. 5 V. & O.

Rolls

10"x1 1/2" Bertach.
 48"x3/8" Niles Straightening.

Punches and Shears

8"x3/16" Geo. Ohl, M. D.
 10"x3/16" Geo. Ohl, M. D.
 10"x1/4" Loy & Nawrath, M. D.
 No. 1 Hilles & Jones D. E.

Turret Lathes

1 1/4"-1 3/4"-2 1/4" Gridley Automatics.
 3x36 Jones & Lamson.
 No. 4 W. & S. Universal Belt.

Miscellaneous

8" Williams Pipe Machine.
 8" Landis Pipe Mch., Type 8-47-2.
 No. 4-E Keller Die Sinker, M. D.
 1 1/2" Ajax Upsetter & Forger.
 16" H. & J. Plate Planer.
 30x30x8 Chandler Planer.
 40" Draw Bench, Motor Drive.
 10 K. W. Toledo Aut. Spot Welder.
 9 K. W. Acme Spot Welder.

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High Grade Machine Tools

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28"x48" Harrington, Sliding Bed.
48"x34" Bridgeford S. P. D. Grd. Hd.
30"x18" American Cone High Duty.
32"x12" B & E. 3 S. C. D., D. B. G.
20"x10" American Grd. Hd. S. P. D.
24"x22" Bradford, Q. C., 3 S. C. D.
36"x16" Lodge & S. Sel. Grd. Hd.
30"x10" L. & S. Patent Head.
30"x12" L. & S. Sel. Grd. Hd., M.D.
30"x14" L. & S., 3 S.C.D., D.B.G.
24"x12" L. & S. Patent Grd. H.S.P.D.
21"x10" LeBlond, Geared Head.
20"x16" American, Geared Head.
21"x10" LeBlond Geared Head.
20"x8" Am. Grd. Hd., M. D., late t.
20-30"x7" Monarch Helical G.H. Cap

Grinders

16"x72" Landis Plain, Self Cont.
16"x48" Landis Crankshaft.
No. 4A Landis Special, Auto. Crank.
16"x48" & 72" Landis Crankshaft.
Type A Production Abrasive Finishing
Nos. 50, 55, 60, 65 and 70 Heads.
6"x18" Landis Plain, Self Contained.
10"x52" Landis Plain, Self Con.
Rivett Internal Grinder.
No. 2 Brown & Sharpe Surface.

Gear Cutters

No. 1 Brown & Sharpe Gear Tester.
No. 615 Fellows.
36BM Gould & F. Gear Rougher.
No. 3, 26" Brown & S. Gear Cutter.
No. 4, 48" Brown & Sharpe.
Nos. 1, 2, 4 Adams Farwell Gear Hb.
18-H Gould & Eberhardt Hobber.
24H G. & E. Hobber.
6", 11", 18" Gleason Gear Generators.

Bolt and Pipe Threaders

1½" Landis Spl. -Sp., Grd. Hd. m. d.
1" Acme Class "A" Single-Spindle.
1½" Acme Model A.
2" Landis Double-Spindle.
18" Landis Pipe Threader.

Boring Mills

84" Cincinnati Rapid Production.
72" Cincinnati Rapid Production.
24"; 36" and 42" Bullard "New Era"
A. C. motor drive.
60" Niles Boring Mill, 2 heads.

Milling Machines

No. 3 Kempnath Universal.

No. 2 LeBlond H. D. Universal.
No. 2 Rockford Universal, complete.
No. 4 Cincinnati H. P. Pl., S. P. D.
No. 3 Cincinnati Pl. Hi-Pwr., S.P.D.
No. 3-B Milwaukee Pl., Dbl. O. A.
Nos. 3; 5-B; 6 Becker Vertical.
No. 3 Cincinnati Vert. H. P., S.P.D.
Nos. 2 and 3 Cincinnati High Power
Plain, S. P. D. flange nose
No. 2 Cin. H. P. Rect. O. A. m-i-b.
5" Pratt & Whitney Automatic.
18" Cincinnati Plain Mfg. Miller.
Briggs Manufacturing Miller.
No. 7-H Becker Lincoln type.
No. 1 Knight Miller and Driller.
4½"x12 Pratt & Whitney Thread Miller
No. 3 & 3-E Lees-B. Thread Millers.
42"x36"x10" Ingersoll Adj. Rl. 4 Hds.

Planers

24"x24"x8" Gray Planer.
42"x42"x12" Detrick & H. Openside.
30"x36"x11" Cincinnati, late type.
30"x24"x11" Detrick & H. Openside.
36"x36"x10" Gray, 2 heads.

Radial and Upright Drills

2½, 3, 3½, 6" Cincinnati-Bick. S. P. D.
3, 3½, 4 American Trip. Pur. S.P.D.
3" Bickford Plain, S. P. D.
4" Heavy Duty Fodick, S. P. D.
6" American Triple Purpose, S. P. D.
No. 2 Colburn Mfg. H. D. 2-spindle.
No. 40 Natco Straight Line Multi.

Shapers

16", 20", 24" G. & E., mtr. dr. thru g.b.
16", 20" and 24" G. & E., cone drive.
20" Seiptoe, S. P. D.
24" Potter-Johnson M.D. thru gear box

Miscellaneous

No. 3-B LaPointe Broaching Mche.
80lb. Bradley Cushion Helve Hammer
High Speed Riveting Hammers.
Nos. 1 & 3 Baker Keyseater Mches.
No. 2 Mitts & Merrill Keyseater.
Nos. 1 & 2 Davis Keyseaters.
V-18 Amer. Vert. Broaching Mche.
15, 30 & 50 Ton Lucas Forcing Pr.
56 Adriance Geared Press.
No. 50 Toledo Arch Press, 10" stroke.
No. 2 L. & A. Punch & Shear, M.D.
No. 1 & 2-X Garvin Tapping Mches.
No. 4 W. & S. Univ. Turret Lathe.

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"RE-MANUFACTURED"

Boring Machines (Hor.)

- No. 1 Cleveland, 24" spindle.
- No. 9 Giddings & L., 3" bar.
- No. 3-A Universal, 3" bar.
- No. 2 Lucas, 34" bar.

Boring Mills (Vertical)

- 24" Bullard, "New Era".
- 32" King, M. D.
- 36", 42" Bullard "New Era"
- 61" Bullard Maxmi-Mill.
- 62", 72" Colburn.
- 73", 84" King.
- 10" Niles, belt drive.

Drills (b. b.)

- 1, 2, 3, 4, 6 spdl. Leland-Gifford.
- 1, 2, 6 spdl. Henry & Wright.

Drills (Mfg.)

- Nos. 2 & 14 Colburn, 1, 2, 4 spindle.
- Nos. 121 & 217 Baker, m. d.
- 21", 24" Cinn.-Bick., slid. head.

Drills (Radial)

- 3", 4" Western.
- 3", 5" American, triple pur.
- 6" American, full universal.

Gear Cutters

- No. 2, Bilton.
- Nos. 3 & 12 Barber-Colman.
- Nos. 9-H & 16-H G. & E. hob.
- Nos. 6, 65, 61, 612 Fellows.
- Nos. 7, 75, 715, 615 Fellows.
- No. 4, 36" Brown & Sharpe.
- No. 6, 60" Brown & Sharpe.
- 6" & 15" Gleason bevel gear.

Grinders (Plain)

- 6"x20" Landis, hydraulic.
- 6"x32" Norton, m. d.
- Nos. 10, 11, 12 B. & S.
- 10"x24", 36", 50" Norton.
- 10"x72" Norton.
- 10"x20", 36", 52" Landis.
- 14"x36", 14"x72" Norton.
- 18"x96" Norton, m. d.
- 20"x120" Landis, m. d.

Grinders (Univ.)

- No. 2 & No. 24 Bath universal.

Grinders (Misc.)

- 8" Taylor & Fenn, Internal.
- Nos. 60 & 70 Heald, Internal.
- No. 16-26" Blanchard, surface.
- 14"x36", 22"x7" P. & W. surface.
- 15"x17"x72" Norton, o. s.
- 36" Diamond, hyd. face.

Lathes (Screw Cutting)

- 8" Rivett Bench, rel. attachment.
- 13"x6" LeBlond, s. p. d.
- 16"-184"x8" American, sel. g. h.
- 16"-184"x8", 10" L. & S. sel. g. h.
- 18"-204"x8" American g. h.
- 20"-224"x8", 12" L. & S. sel. g. h.

- 24"-274"x12", 18" L. & S. sel. g. h.
- 36"-404"x14" L. & S. sel. g. h.
- 36"x30" Rahn-Larmon, g. h.
- 66"x21", 36" Putnam t. g., m. d.

Millers (Thread)

- 44"x12" Pratt & Whitney.
- 6"x14", 6"x48", 6"x80" P. & W.
- No. 4 Lees-Bradner.

Millers (Plain)

- Nos. 0, 1, 2, 3-B, 4-B, 5-B, B. & S.
- No. 1-B Milwaukee, motor drive.
- No. 2-B Milwaukee, s. p. d.
- Nos. 2 & 3 Cinn. h. p., s. p. d.
- No. 3-B, No. 4-B Milw., s. p. d.
- Nos. 4 & 5 Cinn. h. p., s. p. d.
- No. 5 Ingersoll vertical & horiz.

Millers (Univ.)

- No. 2 Brown & Sharpe.
- No. 3-GS Hendey, s. p. d.
- Nos. 3, 4 Cinn. h. p., s. p. d.

Millers (Vert.)

- No. 1-A Milwaukee, s. p. d.
- No. 2-M Cincinnati.
- No. 4 Cincinnati h. p., m. d.
- No. 5 Brown & Sharpe.
- No. 3 Cinn. h. p., motor-in-base.
- No. 4 Cinn. h. p. inter. fds.

Millers (Mfg.)

- 18", 24" Cinn. duplex, s. p. d.
- No. 33-36" Kempsmith, m. d.
- 24"x24"x12" Ingersoll slab.

Planers

- 24"x24"x12" Gray.
- 26" Lynd-Far., open-side.
- 36"x38"x10" Gray, rev. m. d.
- 36"x38"x24" & 48"x48"x10" Gray.
- 56"x56"x32" Cincinnati.
- 72"x72"x12" Cincinnati.

Presses

- No. 20 Bliss.
- No. 4 Rockford.
- No. 303 Bliss, s. s.
- No. 104 Consolidated.
- No. 263-32" Toledo.
- No. 5454-58" Hamilton.
- No. 98-E Toledo, double crank.
- H. & W. 50-ton dieing machine.

Shapers

- 24" Gould & Eberhart, s. p. d.
- 24" Cin., Climax, s. p. d. auto. lub.

Turret Lathes

- No. 2 W. & S., screw, m. d.
- No. 4 W. & S., screw, m. d.
- No. 4-1-9-16" B. & S. screw.
- Nos. 1A W. & S. univ. tur.
- Nos. 3A & 4A W. & S. univ. tur.
- 18"-3-9/16" Libby, motor drive.
- 26"-74" Libby, inter. turret.
- No. 4-1-94" Gisholt, turret.

Send for our "GREEN LIST" No. 151.

HILL-CLARKE MCHY. CO.

645 Washington Blvd.,

Chicago, Ill.

Drills

6 spindle Leland Gifford, all p. f.
6, 4, 3, 2-sp. Allen, Avey & H. & W.
Nos. 1, 2 & 3 Bausch multiple.
Nos. 11, 12 & 13 Natco & P. & W. mult.
2', 3', 4', 6' Amer. rad., 1 tr. purp.

Gear Cutters

6, 11, 15, 24" Gleason bevel.
Nos. 61, 64, 7 Fellows.
No. 2½ Bilton Gear Miller.

Grinders

No. 1 B. & S. Universal all m. d.
18x96 Norton self-contained.
55, 60, 70, 72 Heald internal.
16x48 Landis crankshaft, ch. drive.
Nos. 1, 2 & 3 B. & S. universal.
84" Diamond face.
No. 16 Blanchard motor drive.
14" P. & W. vertical b. b., (2).

Hammers

100, 400, 800 lb. Std. auto. drop.
300, 800, 1500 lb. Chamber. board.

Headers and Threaders

No. 4 Manville SSSD Ball.
No. 4 Manville DSSD, (2).
No. 3 Manville Trimmer.
No. 2 Wat. Farrell DSSD.
No. 1 Wat. Farrell SSSD.
No. 1 Manville DSSD.
No. 0 Manville DSSD.
Several Slotters & Thread Rollers.

Lathes

60"x30" Gleason.
30"x22" Pond.
60"x23" Putnam.
48"x20" Bement-Miles.
48"x15" McCabe.
44"x28" Pond.

Millers

No. 5 Cincinnati Plain, s. p. d.
No. 4S Cincinnati Plain high power.
Nos. 3B & 2B Milwaukee Pl. (2 ea.)
No. 3 Cincinnati Plain, high power.
No. 3B Milwaukee Univ., s. p. d.
No. 3 Brown & Sharpe Universal.
No. 2 B. & S. Univ., 2 cone, b. g.
4" & 6" P. & W. Thread (6).

Planers and Mills

72x72x16" Gleason, 4 heads.
72x48x22" D. & H. openside.
50x56x13" Flather.

48x48x12" Whitcomb.

96" Pond 2 head boring.
42" Bullard Rapid Production (2).
42" Bullard New Era.
54" Bullard Maxi-Mill.
36" Bullard Rapid Prod. & N. E.
24" Bullard Rapid Prod. & N. E.
Baird Horiz. Automatic Turning (7).

Presses

400 ton coin., EGS4 Ferr., 2½" str.
250 ton coin., EGF53 Ferr., 3" str.
150 ton coin., EGS2 Ferr., 3" str.
PG3 Ferracute.
PG4 Ferracute, dbl. roll feeds (2).
Nos. 5, 4 & 2 V. & O.
No. 62 V. & O. dbl. roll feed, s. s.
No. 5 Manv. grd. horiz., 6 to 11" str.
No. 129½ Bliss dbl. crk., 100" bet. up.
No. 4½ Bliss double crank geared,
33" between up. (2)
No. 4B Bliss dbl. cr., 42" bet. up.
No. 6B Bliss dbl. cr. grd., 54" bet. up.
No. 138 Bliss dbl. cr., 79" bet. up. (2)
No. 3½ Bliss dbl. cr., 42" bet. up. (5).
10-4 Z. & H. dbl. cr., flywheel. (3).
(Above 7 machines all have 2" stroke)
No. 156 Waterbury Evelet Mchs. (3).
No. 5 Manville Nut Blanking Press.
No. 610 L. & N. Press Brake motor
drive, like new.

Screw Machines

Nos. 00 & 0 B. & S. High Speed.
No. 00G B. & S. Reg. & High Speed.
No. 2 B. & S. Regular Speed.
No. 6 B. & S. Full Automatic.
9/16", ¾" & 1¼" Gridleys.
¾" & 1¼" Cone, late pattern.
Nos. 24, 33 & 34 New Britain Chuck.
Nos. 5A, 6A, 6C & 6D Potter & J.
No. 1B Foster Chucking.
Nos. 4 & 6 W. & S. Plain, b. g.
Nos. 2A & 3A W. & S. Turret.
2-9/16" Davenport.

Miscellaneous

Blowers, 5½ Roots Foundry (2).
Carbonizer, 29 Am. Gas Rotary.
Edgers, Nos. 1 & 2 Water. Auto.
Furnace, 153 Rockwell Rotary, gas
fired pyromenter.
Mill, 9 roll, for forming 16" sheets.
Rolling Mills, 16"x34" Farrell cold, (2)
Shapers, 24" & 16" G. & E., m. d.
Tapper, No. 40 Anderson Vertical.
Nos. 1, 2, 3 & 4 Baird & Manville,
four slides.

J. L. LUCAS & SON, INC.

3 Fox St.,

Bridgeport, Conn.

Automatic Screw Mchs.

1st National-Acme 5 sp. Model "C", ser. 15,100-B to 15,300-m.d. (5)
1^{1/2}" National-Acme 5 sp. Model "C", ser. 13,278-B & 13,269B, m.d. (2).
1^{3/8}" Gridley 4 sp. Model "GA", ser. 15337-GA & 15,339-GA, m.d. (2)
2^{3/4}" Gridley 4 sp. Model "F", m.d.
2^{1/4}" Gridley 4 spindle Model "F", motor drive (2).
6^{3/4}" Cleveland Model "A", serial 27,754, Brown & Sharpe Nos. 00, 00G, 0, 2, 2G, 3, No. 6. High Speeds Nos. 0 & 0 Turret Formers.

Grinders

No. 2 Cinc. Centerless, ser. 1A-114 & H-2026V, m. dr., Like new (2).
No. 10 B. & S. Self Cont., m.d. (3).
No. 1 Brown & Sharpe Universal (2).
No. 2 Brown & Sharpe Universal.
No. 4A Landis Universal Crankshaft, serial 20,410.
No. 55 Heald Internal Cylinder.

Millers

No. 2 Cincinnati H. P. Rectangular Overarm Plain, motor drive, motor located inside base of machine.
No. 3 Cincinnati H. P. Rectangular Overarm Plain, Motor Drive.
No. 3 Cinc. H. P. Univ., Mtr. Drive.

Miscellaneous

No. 3 Barber-Colman Gear Hobbing Machines, ser. over 890, m.d. (3).
No. 2 Barber-C. Gr. Hob. Mchs. (2).
24" Bullard "New Era" Vertical Mill, serial 11,692.
No. 5 Jackson Die Sinker, Cherry Att. quantity cherry tools.
Drill, Natco 12 spindle straight in line.
No. 000 Hilles & Jones Plate straightener 8 rolls, 40"x4^{1/4}".
No. 1/2 Buffalo Universal Ironworker, Punch & Shear.
Shatz Punch & Shear, Cap. Punch 20mm thick x 30mm.
Knowles Horizontal Keyseater

All machines are located on our floor

Noble Machinery Co., Inc.
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BANKRUPT MACHINERY *of Nationally Known Pump Co.*

CASH OFFERS WANTED FROM USERS

Most of this machinery is practically new having been bought within last three years
Every Machine Is Individually Motor Driven

Every machine equal to the best money can buy. We can save you from 35 to 60% of present-day cost. A prominent machinery dealer in Pittsburgh, Pa., who sold most of this machinery will gladly give you report on same. All motors 220/60/3.

SEND FOR PRICE LIST

BORING MILL

34" King single head, used less than 1 year.

DRILLS

3 Spindle Fostick Sensitive, used less than 1 year.

Sipp 2 Spindle Sensitive.

18" Sipp Single Sensitive.

GEOMETRIC THREADER

Motor Drive, capacity $\frac{1}{8}$ " to $\frac{1}{4}$ ".

LATHES, ENGINE & TURRET

Acme Univ. Turret, 18" swing.

3" Acme Geared Head Flat Turret.

Seneca Falls Grd. Hd 16"x34" centers

Seneca Falls, 12"x36" centers, new,

\$1000 equip., used less than 1 year.

16" Univ. Dividing Hd., tailstock.

PIPE MACHINES

2" Williams Rapiduction and nipple, used less than 1 year.

Oster 2" Cat. No. 392-B.

PRESSES

Arbor, No. 5 with stand.

Arbor, bench type.

1-Gardner Rix. 4 $\frac{1}{2}$ x4 $\frac{1}{2}$ motor, tank.

1-Dayton, Port. 5 HP mtr., tank.

CONVEYORS

431' Matthews Roller bearing 30" wide, 2" Rollers.

6-30" Steel turntables (Conveyor).

1- $\frac{1}{2}$ -ton Hanna Airlift.

All above used less than 2 years.

MOTORS, VISES, TOOLS, ETC.

Martin A. Denkle, 7515 Thomas St., PITTSBURGH, PA.

Rebuilt Machine Tools

DRILLS

No. 2, 4, 22 Colburn Mfg., latest type.
No. 121, 216, 217, 220, 310, 314,
315, 417 Baker Heavy Duty.
D2, D3, D4 Colburn Heavy Duty.
21", 24", 28", 36" Cinc.-Bick. Upright.
34" Barnes Upright.
5', 6' American Triple purpose Plain,
Radial, gear box.
3½', 5', 6' Cinc. Bick. Radial gear box.

4' Hammond Jack Knife Radial.
4 spindle 22½" Barnes Gang.
4, 6 spindle Allen b. b., 12" overhang.
1, 2, 3, 4, 6 spi. Allen b. b., 7" overh.
6 spindle No. 2 Avey b. b., p. f.
No. 00S, 1SS Garvin Hor. Duplex.
No. 25 Bausch Multiple Spindle, m. d.
No. 30 Natco Multiple Spindle, m. d.
3, 4 spindle No. 2 Colburn Mfg., m. d.

PRESSES

No. 206B Toledo D. C. Geared. belt.
No. 92½C Toledo D.C. Geared, m. d.
No. 54A Toledo Special, motor drive.
No. 90E Toledo D. C., belt.
No. 32P, 33, 35 Toledo Stiles Type.
No. 5 Cleveland O. B. I.

No. 6 Waterbury-Farrel D. C.
DD2, DAG 3 Ferracute Dbl. Act.
No. 3 Robinson O. B. I., m. d.
No. 3 Michigan O. B. I.
No. 4 Perkins O. B. I.
No. 5A. Willard O. B. I.

GRINDERS

No. 72A3 Heald Gagematic, 2 m. d.
No. 70, 75 Heald Internal.
No. 60, 65, 55 Heald Cylinder.
No. 2 Diamond Auto. Surface.
No. 2 Brown & S., Auto. Surface.
No. 2, 3 Wilmarth & Morman Auto-
matic Surface.
No. 200-8" Heald Ring.
No. 16-26" Blanchard, belted m. d.
14" Pratt & Whitney Vertical Sur.

22" Pratt & Whitney Vert. Sur., b. b.
60" Bridgeport Face.
60" Springfield Face.
No. 1 LeBlond Univ. Tool & Cutter.
6x18", 10x24", 10x36", 16x52",
Landis Plain Cylindrical, m. d.
No. 11 Brown & S. Plain Cylindrical.
No. 1, 4 Brown & Sharpe Universal.
No. 2-I Brown & S. Univ., m. d.
No. 51 Bealy Motor Driven Disc.

ENGINE LATHES

14"x6" Lodge & Shipley, cone.
14"x6" American Geared Head, m. dr.
16"x6" Cinc., cone.
16"x6" American, Grd. Hd., m. d.,
16"x8" Lodge & Shipley, cone.
18"x6" American, Grd. Hd., m. d.
18"x8" Lodge & Shipley Selec. Hd.
18"x10" Bradford, cone, taper.
20"x8" American, Grd. Hd., m. d.
20"x6" Hendey, Grd. Head, m. d.
20"x14" Hendey belted, motor drive.
21"x10" LeBlond cone, taper.

22"x12" Whitcomb-Blaisdell, cone.
22"x14" Lodge & Shipley Selec. Head,
motor drive.
23"x10" LeBlond, Grd. Hd. m. d. taper
24"x10" American, cone, taper.
24"x10" Greaves-Kluman, cone.
25"x12" LeBlond, cone.
27"x12" American, Grd. Hd., m. d.
30"x14" Lodge & S., cone, taper.
30"x12" American, Grd. Hd., m. d.
36"x18" American, cone taper.
36"x40" Am., Grd. Hd., m. d., taper.

MILLING MACHINES

No. 2B, 3B Milw. Plain D. O., m. d.
No. 2½ Milwaukee Vertical, m. d.
No. 2, 3, 4, 5 Cinc. Plain, s. p. d.
No. 4 Cincinnati Vertical, motor drive.
No. 4 Cincinnati Universal, s. p. d.
No. 3 Cincinnati Vertical, s. p. d.
No. 3 Ohio Universal, cone.
No. 3 Kempnith Universal, cone.
Becker Vertical Continuous.
No. 6 Becker Vertical, cone.
No. 1½, 2, 3 Brown & S. Pl., cone.

No. 3B, 3B Heavy, 4B Heavy, 5B
Heavy Brown & Sharpe Pl., m. d.
No. 1½, 2, 3 Brown & S. Univ., cone.
No. 3V Toledo Vertical, s. p. d.
18", 24", 48" Cinc. Pl. Auto., belt.
18", 24" Cincinnati Dup., Auto. belt.
24" Cincinnati Duplex Auto. m. d.
No. 13B Brown & S. Plain, s. p. d.
No. 21 Brown & Sharpe Auto., s. p. d.
No. 33 Kempnith Mfg. s. p. d.
4" Pratt & Whitney Spline, m. d.

MISCELLANEOUS

15, 30, 50 ton Lucas Pwr. Forc. Presses, ½", 1½" Landis dbl. sp. Bolt Cutters.

Write for complete Stock List.

THE EASTERN MACHINERY CO.
3265 Spring Grove Ave., CINCINNATI, OHIO

Boring Bar, No. 45, 44" Gidding & Lewis, motor drive, like new.
 Boring Mill, 52" King motor drive.
 Boring mill, 36" Niles-Bement-Pond Drills, No. 3 Avey, sgl. spdl. hd. fd.
 Drills, 2, 32" Aurora slid. hd. grd. p. f. with 2-station b. b. jig.
 Drill, No. 2 Colburn, like new.
 Drills, No. D-6 Colburn heavy duty.
 Drill, No. 12 Natco multiple spindle.
 Drill, No. 14 Natco 12 and 22 spdl.
 Grinder, No. 12 Brown & S. Univ.
 Grinder, 16"x52" Norton pl. cyl.
 Lathe, 14x7 Hamilton, q. c. g., c. d.
 Lathe, 18x6 Monarch mfg., new.
 Lathe, 18x10 Lodge & S., grd. hd.
 Lathe, Gisholt Simplimatic m. d.
 Miller, No. 4 Cincinnati plain, m. d.
 Miller, No. 4 Cincinnati univ. b. d.
 Miller, No. 2-B Kearney & T., pl.
 Miller, No. 6 Becker vert rotary tbl.
 Planer, 36x36x16" Cincinnati, 2 hds.

Planer, 36x36x14' or 24' Cleveland Openside, 3 heads., motor drive.
 Press, No. 5 Rockford geared, o. b. i.
 Press, No. 79-C Niagara s. a. d. c.
 Press, No. 7-B Rockford. s. s., d. c.
 Press, No. 152-B Cleveland d. c. 36" between housings, 8" stroke.
 Press, No. 165 Toledo toggle, m. d.
 Press, 300-ton Hamilton s. s., s. c. dbl. grd. 42" betw. housings, m. d.
 Saws, 6x6 Peerless and Racine.
 Shaper, 24" Potter & Johnson univ.
 Shaper, 24" Ohio all-steel helical gr.
 Shaper-Planer, 26" Lynd-Farquhar.
 Threaders, 2" Acme sgl. hd., bolt.
 Threaders, No. 364 Oster pipe, 1 1/2"-4"
 Threaders, No. 8 Stover pipe, 2 1/2"-8"
 Turret lathe, No. 2-A Warner & S. m. d., bar and chucking equip.
 Turret Lathe, No. 3A Warner & S. b. d., complete bar equipment.
 Four Franklin Portable Cranes.

This list covers only a small number of tools that we have available, our entire list consists of over four hundred first-class machines. Inquiries for prices and specifications on any machine required for machine shops, sheet metal or stamping plants, will be appreciated; let us prove that we have the machine to suit your requirements.

STEGEMAN MACHINERY CO.

3530 W. Pierce St., Milwaukee, Wis.

Air compressor, Chicago Pneumatic, 4 cylinder, Duplex, 4700 cu. ft., 125 lbs. pressure, 1000 h. p. synchronous motor, used six months.
 No. 27U Buffalo, Universal punch and shear, very good condition.
 10 ton Alliance crane, 48' span, 3 motors, d. c.
 No. 40 Lucas floor type mill, 4" bar.
 No. 35 Lucas floor type mill, 3 1/2" bar.
 3" Acme bolt cutter, belt drive.
 4 ton Monorail crane, cage operated.
 64" Boring Mill, King, 2 swivel heads.

American Machinery Co., 5511 Euclid Ave., Cleveland, Ohio

No Risk—Completely Rebuilt

42" King Vertical Boring Mill geared feeds, motor drive.
 16-20-24" Gould & Eberhardt Shapers, gear box, motor drive.
 48"x48"x26' Cincinnati Planer, 4 heads, motor drive.
 16"x8' Lodge Shipley geared head Lathe, lever drop aporn, m. d.
 No. 2 Ohio Universal Miller, geared head, s. p. d., like new.
 3' Fossdick Plain Radial, gear box, motor drive.
 6' American Plain Radial, gear box, motor drive.
 6' Cincinnati Bickford Plain Radial, gear box, motor drive.
 No. 4 Cincinnati Plain Miller, high duty, s. p. d.

Send for Complete Stock List.

Iroquois Machinery Co., No. 660 Ohio Street, BUFFALO, N. Y.

Miscellaneous High Grade Production Tools

- 1-Barnes Single End Horizontal Hydraulic Drilling and Boring Machine, motor driven.
- 2-Barnes Double End, same as above, 3-piece base.
- 1-No. 250 H NATCO Hydraulic Vertical Heavy Duty Drill.
- 1-No. 217 Baker Single Spindle Motor Drive Drill.
- 1-No. 217 2-spindle Baker Heavy Duty Drill, motor drive.
- 1-No. 2-D Minster single spindle heavy duty drill, motor drive.
- 3-4' Hammond Sensitive Radial Drills with tap. attach., motor drive.
- 1-Gisholt Simplimatic, hardened ways, 18" air chuck, motor drive.
- 1-6" Lo-Swing Lathe, hardened ways.
- 1-26" Libby Type C Heavy Duty Turret Lathe, motor drive.
- 1-No. 19 53" Besly Disc Grinder.
- 1-48x48x14' Cleveland Late Type Openside Planer.

WE CARRY A FULL STOCK OF USED MACHINE TOOLS—

Your inquiries will be appreciated.

The Strong, Carlisle & Hammond Co.
2832 East Grand Blvd. 1392 West Third St.
DETROIT, MICHIGAN CLEVELAND, OHIO

BANKRUPT SALE

By order of United States District Court

Everything Must Be Sold By March 15th.

No reasonable offers refused

DRILL, 6' Baush Radial, geared head, b. d.
HAMMER, 1100 lb. Morgan Single Frame, steam or air.
PLANER, 72x72'24' Niles, 4 heads. b. d.
PLANER, 96x48'x13' Pond, 4 heads. b. d.
PLANER, 14' G. & W. Boiler Plate, b. d.
PUNCH, G. & W. 1-16" thru 3/4", 30" thrt., b. d.
SHEAR, 12' G. & W., 30" thrt., b. d.
SLOTTER, 12' Freeland Vertical, b. d.

Also miscellaneous small tools and equipment.

Machines now being sold at private sale to highest bidders and can be inspected at any time by calling P. J. Robinson, Agent, 545 Stadium Drive, Fort Wayne, Indiana. Phone A-40474.

F. A. Schack, Trustee - In - Bankruptcy
Woodard Engineering Company

c/o Fort Wayne National Bank, Fort Wayne, Indiana

BORING MILLS

10/16" Niles Extension Type.
14" Betta.
100" Niles-Bement-Pond.
64" Betta.
72" Colburn.
62" Niles-Bement-Pond.
54" Bullard Rapid Production.
42" Gisholt.

36"-44" Niles-Bement-Pond with
side head.
12"-8"-6" Bullard Mult-Au-Matics.
64"-54"-42"-36"-24" Bullard New
Era Type Vertical Turret Lathes.
Nos. 1 & 2 Barret Horiz. Cylinder
Borers.
No. 32 Lucas Table Type.

MILLING MACHINES

No. 5 Cincinnati Rect. Overarm.
Nos. 5, 4, 3, 2 Cincinnati, Plain.
Nos. 3 & 4 Cincinnati Vertical.

No. 4-B Brown & Sharpe, Plain.
No. 3 Kempnith Full Univ. Cone.
No. 3 LeBlond Heavy Duty.

LATHES

90"x50" Niles with 2 carriages.
60"x63" Pond with two carriages,
geared head.

46"x28" Houston, Stanwood and
Gamble Geared Head.
16"x8" American Geared Head.

MISCELLANEOUS

120"x96"x20" Cincinnati 4 Head Planer. Forced Feed Lubrication.
Power Rapid Traverse, Motor Drive.
16" Southwark Plate Planer, 1 1/4" capacity, motor drive.
No. 67 Consolidated Straight Side Press, Geared, Side Trimming At-
tachment, with Marquette Air Cushion.
6" American Triple Purpose Plain Radial Drill.
6" and 4" American Triple Geared Plain Radial Drills.
24" Smith & Mills Back Geared Shaper, Cone.
No. 2 LaPointe Broach.
No. 4 Colburn Heavy Duty Drill, Compound Table.
4" Bickford Plain Radial Drill with Tapping Attachment.

Sun Machinery Company, Inc. 35 Van Buren St.,
NEWARK, N. J.

NEW 3 Phase Motors—5 h. p. \$55.75

LATHES

12"x 5" Cleveland, geared head.
14"x 6" Carroll-Jamieson, q. c.

18"x 8" American qk. ch., taper att.
24"x14" LeBlond.

TURRET LATHES and SCREW MACHINES

Nos. 52, 53 and 55 National Acme.
21" and 24" Gisholt, (motor drive).

8" capacity Acme.
13/16" capacity Foster (2).

SHAPERS

16" Smith & Mills, motor drive.
16" Ohio back geared, crank.

20" Smith & Mills, back grd. crank.
25" Smith & Mills, back grd. crank.

PRESSES

No. 2 Bliss Consol. O. B. I., new.
No. 21 Bliss Consol. O. B. I., new.

No. 39 Bliss horning.
Emco bench.

DRILLS and RADIALS

4-spindle Demco bench (new).
4-spindle No. 1-B Avey high speed.
21" Cincinnati-Bickford, T. A.

5" Baush radial.
22", 24", 26" and 32" sliding head.
No. 66 D Hole Hog 7-spindle.

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Drill, 2 Sp. Avey No. 3 H.S., B.B.

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Drill, 3 Sp. Avey No. 2, 8" O. H.

Drill, 4 Sp. Allen No. 2.

Drill, 3 Sp. Edlund No. 2-B.

Drill, 2 Sp. H. & W. P.F., 12" O. H.

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Cincinnati No. 2, 3, 4 Vertical.
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Cincinnati No. 2M Univ. M-I-B.
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36"x36"x15' Betta Planer—two heads.
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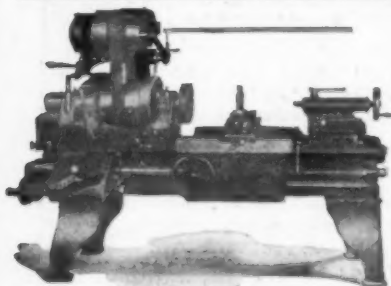
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